

Environmental Policing: Harms, Enforcement and Collaboration

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Abstract

This chapter explores the transboundary nature of environmental harms and how they have shaped the governance of environmental policing in unique ways. It argues that the 'cooperation imperative' demanded by global environmental problems has for sometime been shifting thinking and practice toward new responses to environmental harms. The most recent iterations of these new approaches are characterised as 'New Environmental Governance' (NEG) that emphasizes collaboration, integration, participation, deliberative styles of decision-making, adaptation and learning. This emerging nodal approach is premised on the notion that complex environmental and social systems cannot readily be governed by a single actor, namely, a government acting alone. The chapter highlights shifts in the thinking and arrangements for governing environmental security, from traditional environmental enforcement to markets, early forms of partnerships and finally NEG. Examples of NEG are examined and key benefits to policing and transboundary environmental harms are explored. Recent debates are highlighted, with a focus on whether nodal forms of environmental governance such as NEG can deliver on their promised benefits to offer a more effective, efficient and legitimate resolution to environmental harms than traditional modes of environmental policing. The chapter concludes by setting out emerging issues and new areas of analysis for understanding and explaining environmental problems and policing.

Introduction

During the first half of the 20th century, responsibility for enforcing environmental laws often fell to police. Some of the earliest policing activities focused on counteracting illegal and criminal activities in the area of hunting and poaching (Loo, 2006; Wijbenga et al., 2008: 323). However, since the 1970s, environmental laws expanded to regulate a growing raft of environmental problems (e.g. waste and pollution), and with this expansion came many different regulatory and administrative agencies, at many different levels, to deal with environmental crimes (White, 2011). New treaties and legal instruments established a plethora of enforcement and compliance functions, powers and procedures to be carried out by an increasingly complex cohort of police; specialist environmental protection agencies; customs and specialist environmental courts (United Nations Office of Drug and Crime (UNODC), 2012: 87).

This diversity of actors has meant that those who carried out environmental policing functions were often not police (White, 2013b: 459). In this sense, environmental policing, like many other forms of policing (Brodeur, 2010), extended well beyond the traditional 'police force'. White nicely illustrates this point in his discussion of the United States' term 'conservation police', which 'broadly refers to fish and wildlife officers, wildlife management officers, game wardens, park rangers, and natural resources police' (2011:13).

For decades, the multiplicity of environmental policing providers fulfilled their functions through environmental regulation and enforcement. Yet, despite some success (Cole and Grossman, 1999; Najam et al., 2006), this traditional regulatory approach often proved ineffective and inefficient at arresting environmental harms (Spapens et al., 2014). These weaknesses were caused by an array of factors, not least the mismatch between the traditional regulatory architecture (which is based on ecologically arbitrary human defined borders) and the transboundary nature of environmental harms (United Nations Interregional Crime and Justice Research Institute, 2015; White, 2012).

However, as a growing range of green criminologists, policy makers and other scholars have pointed out, successfully addressing the transboundary nature of environmental harms requires cooperation between states, environmental policing agencies, communities, and the auspices of government and international bodies (Ayling, 2013; Tomkins, 2009; White, 2011). This cooperation is essential at the international level, where growth in cross-border environmental harms poses a formidable challenge to discrete nation states and fragmented policing communities (Steiner, 2007). The need for cooperation is equally compelling at the domestic level, where environmental harms continue to confound regulation by disjointed silos of policing and territorial tiers of government (Gunningham et al., 2007; Lipman, 2013; White, 2012).

This chapter charts how the transboundary nature of environmental harms has contributed to and is creating shifts in environmental policing, which is broadly conceived as the governance of environmental security (Shearing, 2015). After briefly mapping the traditional enforcement approach, the chapter will examine ongoing shifts toward networks, cooperation, and more pluralised forms of security governance. These approaches emerged in the 1980s and began to challenge the classic assumption that public, state backed provision of environmental policing was the best way to achieve public and environmental outcomes. Instead, increasingly pluralised sets of private actors began to provide public environmental policing services.

After mapping these developments, the chapter turns its focus to some emerging issues and areas of analysis for understanding and explaining environmental problems and policing. It argues that the 'cooperation imperative' demanded by global environmental problems has for sometime been shifting thinking and practice toward new responses to environmental harms (Holley et al., 2011).

We suggest that the most recent iterations of these new approaches can be characterised as 'New Environmental Governance' (NEG) (Holley et al. 2011). NEG is a recent development in this 'line of flight' (Deleuze and Guattari, 1987) that emphasizes collaboration, integration, participation, deliberative styles of decision-making, adaptation and learning. Consistent with evolving understandings of NEG, not all these characteristics need be present for a particular practice or program to fall within this category – indeed there are very few single institutional forms that fully capture the idea of NEG in its entirety (Gunningham, 2009). However, the more characteristics that are present, the stronger the claim that they fall within the category of NEG (De Burca and Scott, 2006; Holley et al., 2011).

Throughout this chapter we use the terms NEG, 'governance'; 'environmental governance' and the 'governance of environmental security' rather than policing because these new forms of social steering are not necessarily (although they may be) dependent on formal legal regulation or other interventions by the nation state and its environmental policing organisations (Holley et al., 2011). Within this NEG understanding, police officers and environmental policing organizations are accordingly located as one governor of environmental crime among others (Brodeur, 2010; Wood and Shearing, 2007).

This emerging approach is premised on the notion that complex environmental and social systems cannot readily be governed by a single actor, namely, a government (or those charged with environmental policing functions) acting alone. Consequently, this new form of governance deepens collaboration and polycentricism, with the state no longer necessarily playing the central role in decision-making and implementation (Gunningham, 2008; McGinnis, 1999; Ostrom, 2010:643). Under such 'nodal governance' arrangements

(Johnston and Shearing, 2003), power is diffuse; and sanctions, in the absence of state or other regulatory mechanisms, involve public 'shaming' and other forms of informal social control (Gunningham, 2008). This perspective conceives of governance (Rhodes, 2007) as extending beyond government in much the same way in which policing, within criminology, has come to be understood as extending beyond police (Brodeur, 2010). NEG's vision also embraces green criminologist's concerns of broadening definitions of environmental harm, moving from past focused processes to forward looking ones that try to anticipate and prevent the realisation of harms (Shearing, 2013; Shearing, 2015; White, 2009; Zedner, 2007). Although still an evolving literature, a growing numbers of scholars and policymakers argue that these elements of NEG can substantially improve the effectiveness, efficiency and legitimacy of responses to environmental and other types of harms. The chapter highlights the contours of this emerging NEG approach, and its strengths and weaknesses of NEG for addressing transboundary environmental harms.

Before embarking on this discussion it is important to note that in a single chapter, much of what will be discussed will inevitably caricature the wealth of global experience and debates in environmental policing that often vary with culture, legal structures, and environmental problems (Wijbenga et al, 2008: 330). Much of the scholarship on NEG, including the work discussed in this chapter, has also been developed in the fields of regulation and governance, rather than within the field of policing, or more specifically green criminology (c.f Bisschop and Verhage, 2012). Despite this, NEG scholarship arguably has many points of overlap with work in environmental policing and green criminology, not least because both examine institutions that apply rules (both hard and soft) to create order (Shearing, 2015). Like policy-oriented approaches to green criminology, NEG scholarship also shares an interest in examining and identifying the kind of policies that may be effective in controlling environmental harms (Lynch and Stretesky, 2011). Moreover, NEG's collaborative and participatory approach echoes the growing trend in criminology and policing scholarship to look beyond the state and Westphalian visions of governance (Krasna, 2001) to other 'auspices' and 'providers' of governance (e.g. private and community actors) (Bayley and Shearing, 2001; Loader, 2000). Given these links, the chapter's exploration of shifts toward NEG (as part of a regulatory frame) aims to assist criminology and policing scholarship to understand the co-configuration of environment problems and global environmental policing. It also sets out new modes of analysis and research required to understand and explain them (Shearing, 2015).

The analysis proceeds in three parts. Part one commences by charting how the transboundary nature of environmental harms has led to NEG, highlighting shifts in the thinking and arrangements of security governance, from traditional environmental enforcement to markets, early forms of partnerships and finally NEG. Part two goes on to examine the NEG approach, identifying its distinguishing features; examples in practice and the key benefits that NEG could contribute to effectively police and govern transboundary

environmental harms. Attention is paid to international harms and domestic contexts (including those of weak states), since transboundary environmental problems infiltrate administrative regions at all levels, in addition to crossing sovereign state boundaries (Yu, 2011:188-189). In the course of this chapter we will highlight recent debates, with a focus on whether nodal forms of environmental governance such as NEG can deliver on their promised benefits to offer a more effective, efficient and legitimate resolution to environmental harms than traditional modes of environmental policing and enforcement. As we will see below, precisely because of its nodal approach NEG's successes in practice often depend on its coexistence with traditional enforcement focused forms of environmental policing (De Burca et al., 2013; Driessen et al., 2012:157; for a general discussion of forms of collaboration between police and other agents of security governance see Ayling et al., 2009). Part three will offer some concluding thoughts and sum up the chapter by setting out emerging issues and new areas of analysis for understanding and explaining environmental problems and policing.

Governing Environmental Harms – Regulation, Markets, Partnerships and NEG

To understand why NEG is considered a promising means of addressing transboundary environmental harms, it is necessary to briefly examine the history of environmental regulation and policing. This historical perspective is important because NEG thinking and arrangements arose out of the perceived limits and failures of 'old governance' (e.g. international treaties and intergovernmental organizations, and domestic regulation) (Abbott and Snidal, 2009).

The traditional architecture of national and international environmental regulation and enforcement arose in the 1970s, against the backdrop of states exercising sovereign ownership over natural resources within their territory (Gess, 1964). It is therefore logical that early responses to environmental harm relied on the nation state, or at the international level, groups of states, acting primarily through treaty-based intergovernmental organizations (Abbott and Snidal, 2009: 505; De Burca et al., 2013). A raft of specific international rules addressing problems such as trade in endangered species and pollution from ships were developed and overseen by international organizations, including the United Nations Environment Programme (Kelemen and Vogel, 2010). Under this approach, states were inclined to believe that they understood environmental harms clearly: they could be defined in advance and managed through mandatory rules (De Burca et al., 2013:730; see O'Malley's, 2011, insightful discussion of shifting conceptions of security).

A similar example is the 'command and control' approach to environmental regulation adopted by domestic western governments. This involved centralised legislatures setting blanket environmental targets, such as emission standards, exposure levels or technology standards (the command). Delegated environmental policing agents— such as environmental

protection agencies, Forestry Commissions and local municipal councils– were then empowered to police and monitor environmental targets, oversee compliance and impose penalties where standards were breached (the control) (De Burca et al., 2013; Gunningham et al., 1998; White, 2012).

In many cases, this state-centric approach to law and regulation was relatively effective, achieving a number of gains in halting and reducing environmental harms (Cole and Grossman, 1999; Najam et al., 2006). Traditional environmental policing approaches, for instance, appear to be particularly effective when specialist environmental courts or trained judicial officers with environmental knowledge were involved (as both produce a greater likelihood of prosecution of offenders and greater use of appropriate sanctions) (White, 2013a).

However, this regulation and enforcement approach also suffered from a number of weaknesses that limited its effectiveness. For example, at the international level, ‘treaty congestion’ and fragmentation led to claims that international environmental law was too unwieldy, incoherent, and ineffective for confronting increasingly serious global environmental challenges (Najam et al., 2006; Scott, 2011). International cooperation on crime was also scarce, with states and international organizations struggling with awareness and knowledge of environmental harms, not least because there was little sustained effort to share data among different states, environmental (and non environmental) policing organisations and other agencies (Elliot, 2012: 95; White, 2009: 238;).

Similar claims were levelled at domestic systems, where the centralised and uniform nature of command and control regulation was increasingly criticised as costly, cumbersome and inefficient (Karkkainen, 2006). The effectiveness of these approaches was limited due to under resourced environmental policing organizations (e.g. regulators), evidence barriers and limited data gathering and monitoring (particularly when harms crossed domestic boundaries) (White, 2012). These challenges were only augmented in the developing world, where the allocation of human and financial resources to environmental harms was extremely scarce (Huisman and Van Erp, 2013).

Traditional command and control approaches also suffered from a variety of enforcement challenges that often varied with contexts. In some countries, such as the United States, adversarial enforcement by ‘stick’ waving environmental regulators produced counterproductive resistance from regulated individuals and firms (Lazarus, 2004). Such resistance was said to heighten problems such as evasion, concealment and displacement of crime to countries with more lenient inspection regimes (Bisschop, 2012). There are also numerous examples worldwide where regulatory frameworks suffered from a dearth of enforcement, often because of lack of political will, regulatory capture, insufficient penalties, and inadequate sentencing by the courts (Wilkinson et al., 2014: 9)

Another limitation of regulatory approaches was their failure to provide sensitivity to local contexts (Stewart, 2001; Karkkainen, 2006; Holley et al., 2011). Traditional laws and treaties tended to be single media/issue based and were administered through siloed policing organisations and regulatory agencies. This made it increasingly difficult for traditional policing and regulation to address more complex environmental problems, which often involved multiple polluters and required a more holistic and integrated approach to solving harms (Durant et al., 2004; Freeman and Farber, 2005; Holley et al., 2011: 2). These challenges were only augmented in federal systems of governance, such as in the USA, Canada and Australia, where conflicting lines of authority made coordination of policing and regulation functions particularly complicated (White, 2011).

One final weakness of traditional policing and regulatory approaches was that they were typically only suited to addressing past events, such as cleared forests or dumped pollution in a water body. The regulatory approach was not designed to pre-empt the realization of harms (other than through the deterrence effect of punishment) or encourage norms and behavior that foster proactive protection and management of the environment. As a result, regulation was ill suited to accounting for, and adapting to, the dynamic nature of ecological systems (Gunderson and Holling, 2001; Holling, 1978) and changing the behaviour of many offenders who had a laggard culture or who were well resourced; able to fight, delay and in some cases buy their way out crimes (Ayling, 2013; Spapens et al., 2014). For similar reasons, traditional regulation provided a poor response to harms (e.g. wildlife poaching) that arose from actions deeply embedded in local communities with little alternative sources of income (Huisman and Van Erp, 2013; Houfu and Xiaopu, 2013; Nellemann et al., 2014).

Together, these numerous challenges conspired to reduce the effectiveness of traditional environmental policing and regulatory enforcement. State-centred hierarchy was accordingly no longer seen as the exclusive response to all environmental problems (Durant et al., 2004). Certainly, enforcement and compliance with laws would remain a key part of environmental policing and regulation, and the environmental function of traditional police would continue to be redefined and reorganised (e.g. the Dutch Police discussed in Wijbenga et al, 2008; or Interpol's roles in global environmental law enforcement discussed in INTERPOL, 2015). However, by the 1980s it was increasingly common for new market-based instruments, partnership and light-handed approaches to be explored, particularly relating to more complex environmental harms, such as the causes of climate change, deforestation and diffuse water pollution.

For some scholars and policymakers, environmental harms were seen to occur as a result of a failure of markets to properly value environmental resources (Cutting and Cahoon, 2005:

55; Roma, 2006: 534). This line of thinking gave rise to the creation of market signal instruments (e.g. climate markets spurred by the United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto; McKibbin and Wilcoxon, 2002) that placed a value on and charged for the use of scarce assets (Holley et al., 2011: 2). In theory, by creating such markets (e.g. regulated trade in wildlife), those who are likely to harm the environment (e.g. through poaching) will be less inclined to do so because they will see wildlife or other aspects of the environment as a resource worth protecting (Huisman and Van Erp, 2013; see Shearing, 1993 for a discussion of 'constitutive regulation').

Despite some successes, many market-inspired approaches have proven to be less environmentally successful than traditional forms of policing and regulation (Howes et al., 1997). In part, this is because of a variety of practical and contextual difficulties faced by governments who seek to develop and rely on market mechanisms. Although, in theory free markets mobilise knowledge (Hayek, 1945), most market-based instruments share with command and control a requirement for state centralised planning and knowledge, such as setting the right tax, charge or cap levels. This can often be difficult for policymakers in the absence of an existing market reference (Freeman and Farber, 2005; Sabel et al., 1999). Regulated actors, particularly corporations, are also historically opposed the introduction of economic initiatives such as taxes and charges, preferring the certainty of regulation to the uncertainty of novel approaches (Gunningham and Holley, 2010). Also, tradable rights/pollution need a similar level of compliance and enforcement machinery as required for traditional regulation. This is a point illustrated in Lewis and Takahashi's (2013: 119) analysis of illegal international trade in bear bile, where they argue that while the best option for combating Japan's trade in illegal bile might be to allow both international and domestic trade to continue, this will also require the domestic Japanese market to be subjected to greater traditional policing and regulation via new monitoring and offences.

An alternative to direct regulation, more popular with business and increasingly cashed strapped domestic policing organizations and regulators, was a variety of voluntary and light-handed initiatives that emerged during the late 1980s and 1990s. These included business-led voluntary and self-regulatory approaches, such as Responsible Care (Lenox and Nash, 2003). While they achieved some limited success, they typically failed to deliver acceptable levels of industry-wide compliance, particularly where the gap between the private interests of business (not least, making a profit) and the public interest in environmental protection was substantial (Freeman and Farber, 2005; Gunningham and Sinclair, 2002:145-148,155).

Stronger but reconfigured roles for domestic state regulation were accordingly pursued. These approaches typically maintained a state underpinning, but looked to engage with business and NGOs in ways that were considered more effective and efficient, while also maintaining cooperation and trust of regulated actors. This was primarily achieved by:

accounting for and facilitating the use of non-state knowledge and capacities; and by harnessing related motivational drivers, such as profit, social license (e.g. negative business publicity by NGOs); and other informal sanctions (Gunningham and Sinclair, 2002).

These reconfigured approaches varied in form, and have been considered and analyzed by a variety of theories. These approaches include: environmental partnerships and negotiated agreements in Europe (Orts and Deketelaere, 2001); tripartite arrangements between regulators, communities and industry (Ayres and Braithwaite, 1992) such as environmental improvement plans in Australia (Holley and Gunningham, 2006); informational-based regulation, embodied most prominently in the Toxic Release Inventory in USA (Karkkainen, 2001); eco-modernization that facilitated cooperation and the uptake of new technologies in Europe (Mol and Sonnenfeld, 2000); and reflexive law approaches, where firms developed their own process and management system standards designed to achieve regulatory goals (Orts, 1995).

Each of these approaches provided greater flexibility to businesses, including facilitating beyond compliance activities. However, in the absence of more coercive intervention by domestic state regulators, their impact has (for the most part) been very modest and tended to operate more or less at the margins (Gunningham and Holley, 2010). Even so, what was unique about these flexible and cooperative programs was that they signified some of the first steps toward what has become NEG thinking and practice (discussed below), where non-state actors take on a greater role in the 'steering' and 'rowing' of addressing environmental harms (Johnston and Shearing, 2003; Osborne and Gaebler, 1993).

This trend toward non-state steering and rowing was mirrored by unique international changes. For instance, new trans-boundary and trans-governmental environmental networks of state officials and private actors emerged to combat the above-mentioned international inertia and fragmentation (De Burca et al., 2013; Slaughter, 2004). International organizations also sought to use their mandates and expertise to extend governance beyond a focus on state agreements and, in addition, sought to deepen the application of rules. They did this through partnerships, involving other organizations and actors, and establishing and diffusing new niches of governance (Andonova, 2010; De Burca et al., 2013: 734; Glasbergen et al., 2007; Shepston Overly, 2010). Emblematic of these approaches were new international enforcement collaborations among policing organisations (Pink and Lehane, 2011; White, 2011) as well as the growing pluralisation of policing (Bayley and Shearing, 1996; Loader, 2000) and NGO engagement in crime monitoring and policing (such as Greenpeace and Humane Society whaling monitoring). White (2012: 5–6) provides a useful illustration of the different types of engagement pursued by NGOs in environmental policing; identifying NGOs, such as the RSPCA, who are granted official status and legal rights in regards to investigation and prosecution of animal

abuse, as well as other NGOs who play a more indirect role in policing by collecting evidence of illegal activities that are forwarded to relevant authorities and can be used in a court of law to prosecute environmental offenders.

These international and domestic developments opened up new forms of non-state auspices and influence, in ways that arguably pioneered NEG. However as we will see, what differentiates this NEG phase from these earlier developments is that it demands levels of collaboration, participation, deliberation, flexibility and adaptability that would have been unimaginable years before (De Burca et al., 2013; Holley et al., 2011).

New Environmental Governance

An overview of NEG theory and practice

The NEG enterprise involves collaboration between a diversity of private, public and non-government stakeholders who, acting together towards commonly agreed (or mutually negotiated) goals, hope to achieve more collectively than they could otherwise do individually (Holley et al 2011: 4). This approach relies heavily upon participatory dialogue and deliberation; flexibility (rather than uniformity); inclusiveness; knowledge generation and processes of learning; transparency and institutionalised consensus-building practices (De Burca and Scott, 2006; Trubek and Trubek, 2007). Rather than using law to secure uniform compliance with fixed rules, NEG seeks to use open-ended standards that can accommodate diversity, and tries to solve problems before coercion is necessary (although this does not mean that traditional enforcement is entirely abandoned) (Cottrell and Trubek, 2012; Ayres and Braithwaite, 1992 and their discussion of responsive regulation). Through the use of collaboratively developed strategies and partnerships between policing organizations, community groups, and traditional environmental offenders (such as industry), NEG seeks to look beyond government auspices to harness non-government institutions to contribute to preventing harms and enhancing environmental performance (Abbott and Snidal, 2009; Ayling, 2013; Bricknel, 2010; Grabosky and Grant, 2000; UNODC, 2012).

Just as there is no singular green criminology theory (Lynch and Stretesky, 2014: 77), there is no firm agreement on a definitive 'model' of NEG (Van der Heijden, 2013). Rather, a variety of terms and theories have been developed to describe and prescribe how NEG operates. These include: 'experimentalism' (De Burca et al., 2013) that draws upon John Dewey's philosophy and its development by Dorf and Sabel (1998) as a 'new' form of decentralized governance that uses local knowledge in producing solutions to local problems (see below for a further discussion); 'post sovereign environmental governance' (Karkkainen, 2004b) that promotes state/non-state partnerships that enables less exclusive more horizontal forms of 'hybrid governance'; 'collaborative governance' (Freeman, 1997) that emphasises broad participation and public-private partnerships; 'adaptive governance' (Chaffin et al.,

2014) that emphasises the importance of networks of actors in the governance of socio-ecological systems; and 'global environmental governance' (Okereke et al., 2009) who in much the same vein argues for a shift in climate governance to less state-based forms that emphasise the development of parallel initiatives that involve the participation of a range of actors.

These perspectives vary somewhat in their emphasis, encompassing different schools of thought and applying distinct institutional and political approaches to a range of environmental harms. However, what binds these theories is a number of common broad characteristics. These include a focus on the virtues of flexibility, participation, deliberation, collaboration, learning and adaptation (Karkkainen, 2004a).

The precise nature of these characteristics can vary across theories and practices. For instance, NEG approaches to collaboration broadly share an emphasis on multiple government and/or non-government actors combining knowledges, resources and powers to address shared problems. However, such activities may be one-off short term efforts (e.g. consultation with affected stakeholders about the broad parameters of a local plan to reduce pollution), while others may involve significant long-term relationships and stakeholders commitments, including implementation and/or enforcement (Head, 2005). NEG ideals of participation and deliberation also share an emphasis on giving non-government actors a greater role in environmental governance, but precisely who participates, in what form and to what extent may differ. For instance, some NEG examples may focus on local citizens and others on international NGOs (Lobel, 2004). The flexibility and learning features of NEG aspire to rules that are provisional, account for different contexts, and are adjusted in light of what may be learned about their success in governing environmental harms (Karkkainen, 2005). However, precisely what is monitored, who is responsible for this monitoring and the extent of provisionality can vary considerably (for one example, see the discussion below on experimentalism).

It is an open question whether NEG sufficiently accounts for the practical differences *within* these evolving environmental governance examples and theories (Karkkainen, 2004a). Using a generalised rubric like NEG to lump different theories and practices together does risk it becoming a 'catchall term' (von der Porten and de Loe, 2013; Karkkainen, 2004a). Even so, at this stage of the inquiry, there are arguably considerable benefits to be gained from grouping different theories and scholarship within a NEG framework. A generalised understanding of NEG (with apposite attention to differences) can facilitate the linking and comparison of theories, as well as testing, development and reformulation. Doing so can ensure a better understanding of what is occurring, and offers a constructive approach for influencing the direction of sprawling governance theory and practice in the environmental arena (Lobel, 2004:501-506; Walker, 2006).

Domestic practices that fall within the NEG category typically involve a variety of non-state actors assuming administrative, policing, managerial and mediating functions previously undertaken by the state (Gunningham, 2009; Ostrom, 2010: 643). Often domestic NEG programs engage both past 'offenders' (e.g. those who have breached the law and harmed the environment); potential 'offenders' (those who may harm the environment, whether legally or illegally); as well as interested third parties (e.g. NGOs), to develop environmental protection goals, targets and a suit of actions to redress past harm, but also to proactively manage and prevent future harm.

These past or future harms often relate to complex transboundary environmental challenges such as diffuse water pollution and management of natural resource like land and forests. Existing legal instruments already regulate many of these problems, however as discussed above, these instruments have often been ill-suited to resolving the behaviours that have caused environmental harms. For example, in the case of diffuse transboundary water pollution, the problem is often caused not by a single large ship or factory, but rather by the collective discharges of a variety of ships, commercial enterprises, farms and/or households. In such cases, many of the causes are not illegal at the individual level, and only give rise to harm at the cumulative level (White, 2009: 231). In this context, regulators have little recourse under traditional regulatory enforcement. Even if they have cause for traditional regulation, regulators are often vastly outnumbered by the multitude of causes, or the problems 'fall through the cracks' between different tiers of government or different government agencies which allocate jurisdictional responsibility along ecologically arbitrary, human-defined boundaries (Gunningham et al., 2007: 127).

Prominent NEG approaches that have tried to overcome these issues and manage complex environmental harms include regional natural resource management bodies in Australia (Holley et al., 2011); collaborative approaches to water management in New Zealand (Holley and Gunningham, 2011); and endeavours of multiple agencies and stakeholders addressing competing demands on water resources in the Bay Delta in the USA (Holley, 2015).

NEG has also been identified internationally and in the interaction between international and domestic levels. These NEG programs often involve more flexible open-ended standards, multi-level networks, as well as significant decision and implementation roles being given to non-state actors (Cottrell and Trubek, 2012: 362). Examples included the European Union's Water Framework Directive (Trubek and Trubek, 2007); the Forest Law Enforcement Governance and Trade initiative (Overdevest and Zeitlen, 2014); the Partnership for the Development of Environmental Law in Africa (PADELIA) (Kimani, 2010); the Inter-American Tropical Tuna Commission (De Burca et al., 2013); and management of the Great Lakes in the USA/Canada (Karkkainen, 2004b). Elliot (2012: 98) also details a raft of related networked and collaborative initiatives, including bilateral and regional agreements that bring governments together in new arrangements. These include Wildlife

Enforcement Networks (ASEAN-WEN), the Lusaka Action Task Force, as well as key nongovernmental organizations such as TRAEIIG, the Environmental Investigation Agency and the International Fund for Animal Welfare. The latter work independently and with governments and international organizations to monitor environmental crime, gather and share intelligence, and provide training and capacity building (Elliot, 2012: 98).

NEG's potential benefits for addressing environmental harms

The shift to NEG we have highlighted above has to some extent been shaped by specific contexts and influences (De Burca, 2010), but generally speaking it has come about because of the perceived capacity of these more nodal, collaborative and adaptive approaches to deliver benefits in circumstances where traditional approaches cannot (Holley et al, 2011: 4). For example, prescriptive regulatory standards - and even caps/taxes in some market-based instruments - depend upon a degree of centralised knowledge (in order to set suitable standards, prices or caps) that is often not available. In contrast, the sort of collaborative, participatory and deliberative approaches contemplated by NEG are said to lead to problem solving that is inclusive of local circumstances and able to capitalise on the unique knowledge and capacities of multiple public and private actors in managing environmental harms (Holley et al, 2011: 4). Such benefits can be seen in what O'Rourke and Macey (2003) term local 'bucket brigades', which allow community members to sample air emissions near industrial facilities. According to O'Rourke and Macey (2003: 384) these brigades represent a new form of environmental policing where residents participate in identifying local issues, and collect, analyze, and deploy environmental information to help foster crime control— much like earlier community policing initiatives (Lynch and Stretesky, 2013).

Other studies, such as Kimani's analysis of PADELIA, also suggest that the kind of collaborative and participatory engagement envisioned by NEG can help state and non-state actors to 'identify their interests, frame issues and enhance implementation' of laws to better address environmental harms (2010: 50–51). Further, by fostering collaborative decision making among previously fragmented policing organisations and non-government actors, NEG may better integrate and respond to increasing connections between different forms of crime. Signs of such an NEG approach are evident in the International Consortium on Combating Wildlife Crime, a coordinated global response to wildlife crime and its connections to money laundering, fraud, counterfeiting and violence (INTERPOL, 2015).

The direct involvement of government and nongovernment actors in NEG's collaborative styles of implementation, management and monitoring can also help augment and extend the resources of traditional regulators (Ayling, 2013; White, 2011). For example, government actors engaged in multi-stakeholder collaborative environmental forums may have more formal opportunities to link-up with NGOs to access and better coordinate the

use of international resources to fund programs that address transboundary environmental harms (Duffy, 2013: 232; Kimani, 2010). Further, the engagement of local non-government actors in NEG approaches has been shown to bring additional forms of social control to addressing environmental harms (such as peer pressure), as well as expanding the scope of surveillance by bringing together agencies and stakeholders who are close to the problem (Freeman and Farber, 2005: 877; Holley and Gunningham, 2011; Morrison, McDonald and Lane, 2004; Karkkainen, 2002: 228; Lubell et al., 2005). This type of collaboration is likely to have particular benefits for 'weak' states, where government resources and expertise may be otherwise limited, and environmental harms often go unseen (Börzel, 2011:13; Braithwaite, 2004). Chhetri et al. (2012) provide a nice example of such benefits in their study of community forestry in Nepal. They found that local enforcement in community settings detects far more forest crimes (e.g. illegal extraction of firewood) than enforcement by formal forest authorities.

The involvement of non-government actors in deliberative styles of governance (albeit varying from local citizens to international NGOs) can also foster stakeholder ownership and 'buy-in' (Ayling, 2013; Graboksy and Grant, 2010; Karkkainen, 2001) and can give greater voice to marginalised interests, as contrasted to an exclusive reliance on bureaucratic expertise in hierarchy or on price and competition in markets (Holley et al., 2011: 4; Sabel et al., 1999). Such buy-in and ownership can mean that the perceived costs of compliance are likely to remain low (Cottrell and Trubek, 2012: 390), as Holley and Gunningham (2011) show in their analysis of a collaborative NEG program in New Zealand. They argue that the traditional New Zealand regulatory framework had proved unsuccessful at addressing pollution of many streams and other water bodies. By fostering collaboration amongst regulators and those who manage land beside the waterway, including people who had previously breached the law, farmers came to 'buy-in' to the management of the stream environment, and this contributed to demonstrable environmental improvements.

In a similar vein, NEG's deliberative and participatory approaches are argued to be more adept at changing behaviour by focusing on internalised drivers and norms, developed from social context and shared values (Holley and Lawson, 2015). NEG may activate these norms by engaging those who may potentially harm the environment directly in decision-making and implementation of environmental programs, in partnership with policing organisations, scientists, NGOs and others. Through collaborative decision-making and dialogue, a shared understanding of environmentally important norms can emerge (Bandura, 1997: 483; Cottrell and Trubek, 2012: 390; Holley and Lawson, 2015). Such approaches would appear to have particular potential in changing drivers of environmental harm, such as through engaging local communities in developing and implementing conservation processes and ecotourism (Huisman and Van Erp, 2013).

NEG's learning and adaptation focus is thought to ensure that it copes better with the dynamism, uncertainty and complexity of environmental harm than either traditional regulation (which can easily ossify, freeze standards at a particular point in time or adopt a one size fits all approach) or many market-based approaches (where significant post-hoc programme corrections to pollution levels and permits risk undermining the security of ownership rights on which the market itself depends or prevent new entrants) (Holley et al., 2011: 5). Instead, NEG ideals, given their nodal features, are said to enable governance processes that 'learn' more easily from changing circumstances 'on the ground', making the governance framework more responsive to the complexity of crime situations it faces (Abbott and Snidal, 2009: 546, 552; Bisschop and Verhage, 2012; 3; Durant et al., 2004: 4; Lobel, 2004: 502; Orts, 1995; Sabel et al., 1999).

The most fully formed learning and adaption architecture has been developed by experimentalist strands of NEG theory (De Burca et al., 2013). Experimentalist theories suggests that widespread information sharing can enhance the overall performance and accountability of governance systems, particularly by sharing information and experience between localised groups (horizontally), and/or between localised groups and agencies (vertically), to periodically reformulate and progressively refine minimum performance standards, desirable targets, and preferred means of achieving them (see: Karkkainen et al., 2000: 690; Scheuerman, 2004:115).

Such explicit commitment to knowledge generation—an idea that has been explored within criminology more generally (Froestad and Shearing, 2013) — is arguably better suited to addressing specific environmental harms of moving species, resources and pollutants across borders, as it demands cross-jurisdictional information sharing between government and non-government collaborators (be they Westphalian state boundaries or domestic ones) (Elliot, 2012). Kimani's (2010) findings in the case of PADELIA suggest that these NEG ideals hold promise, where cross-fertilisation of ideas occurred horizontally between developing nations, rather than simply downwards from developed to developing nations (2010: 51). This contributed to 'the creation of local capacity to develop, implement and enforce environmental laws, which would outlive the duration of the project' (Kimani, 2010: 50-51). Cottrell and Trubek (2012) offer a more expansive example in their study of the Tuna-Dolphin case, subsequent to the La Jolla Agreement and International Dolphin Conservation Program. These NEG developments gave rise to an ambitious onboard observer program. Using the information generated, stakeholders were able to meet their objectives by developing recommendations and exchanging best practices protocols (e.g. improving performance with respect to releasing dolphin by-catch alive). According to the authors, 'Flagship states ultimately complied with the La Jolla Agreement and their fleets' performance exceeded expectations, achieving a dolphin kill rate that was one-tenth the kill rate of the highly regulated U.S. fleet in 1988, using virtually the same technology (but with greater skill and care)' (Cottrell and Trubek, 2012: 389-390; De Burca et al., 2013).

NEG critiques and debates

Despite the potential benefits of these NEG features, it is important not to overlook the potential weaknesses and challenges of NEG. As an 'experimental' process, criticism and revision has been— and continues to be— a feature of these developments. As a consequence, what has emerged is not a linear trajectory but rather a 'line of flight' that includes multiple strands that build upon, rather than replace, one another. Perhaps the biggest challenge for NEG is the uncertainty of whether its benefits can actually be achieved in practice (Driessen et al., 2012). Experiments by their very nature involve attempts to governing agendas that in practice often depart significantly from what was intended – 'the messy realities of governance' (Weir et al., 1997).

Certainly the above studies suggest there are successful examples. But NEG has also faced a litany of criticisms, including claims that it leads to lowest common denominator solutions, rent seeking, dominance by self-interested economic actors, disenfranchised environmental interests and problems sustaining participation after initial bursts of enthusiasm (see generally: Holley et al., 2011). These criticism very often come from influential actors such as state agencies or powerful economic interests, who become frustrated with what they often regarded as the complaining voices and frustratingly intransigent position taken by community actors. The other side of this fence is the frustration that less powerful actors feels as they find it difficult to match the resources that powerful stakeholders can devote to promoting their interests in NEG forums (Holley et al., 2011).

Considerable empirical research is still required to resolve disagreement surrounding the impacts of NEG, as it is the principles and practical conditions that will enable successful NEG experiments to be replicated (Holley et al., 2011: 9; Karkkainen, 2006).

One particularly fruitful area of research has focused on whether and how NEG interacts with earlier phases of environmental policing and regulation— principally command and control— which remains a bedrock of addressing environmental harms and crimes, such as illegally taking water or clearing vegetation (Bartel 2005; Gunningham 2009: 159; Holley and Sinclair 2011; Karkkainen, 2004a; Lobel, 2004). Scholars have tentatively identified a range of possible relationships between traditional command and control enforcement and NEG, each of which has differing implications for 'success'. Some of the more underexplored hypotheses include: 'gaps' (where law and collaboration conflict and potentially inhibit mutual success); 'default hybridity' (a constructive relationship akin to Ayres and Braithwaite's (1992) regulatory pyramid, where regulation should be set precisely for the purposes of inducing otherwise reluctant people to embrace NEG); and 'complementarity' (where the two approaches are merged into an integrated system) (De Burca and Scott 2006; Trubek and Trubek, 2007). While debates over these hypothesis continue, a range of

NEG theories increasingly recognize that NEG very often needs to operate in hybrid within conventional forms of governance, both to prevent abuse and to incentivize actors' participation (De Burca et al., 2013; Holley and Gunningham, 2011). These developments, as we have noted throughout, parallel changes in policing globally that are increasingly characterized by networks of governors (Brodeur 2010) – both auspices and providers– who collectively enable the nodal governance of security.

More generally, the few studies that have attempted to grapple with NEG's evolving performance in practice, increasingly suggest that it is no panacea to the globe's continuing environmental harms (De Burca et al., 2013; Holley et al., 2011). Indeed, results have been mixed at best. As already suggested, this is because NEG is a continuing social experiment that is transiting from a period of testing by trial and error to one of consolidation and refinement. But the success of this new more mature stage will depend, as Dorf and Sabel (1998) and other experimentalists (for example, Fung 2006) have argued, principally upon the heeding of lessons of earlier successes and failures, and drawing upon broader lessons from them to make NEG work in practice. A number of scholars have begun this task (De Burca et al., 2013), and a range of identified principles and conditions under which NEG appears likely to work include: the need for significant resourcing; carefully designed incentives; the identification, creation, nurturing and maintenance of governance capacities (particularly for non-government actors); and incorporating effective horizontal, as well as vertical, information-exchange mechanisms into NEG structures (Holley et al., 2011).

Concluding Remarks

Criminologists have expressed concern that their discipline continues to neglect green issues (Lynch and Stretesky, 2014). This is not to say progress in green criminology and environmental policing has not been made (Bisschop and Verhage, 2012; Gibbs et al., 2010; South and Brisman, 2013; Spapens et al, 2014; White, 2012). However, more work is needed to 're-create' criminology and its understanding of environmental policing (Lynch and Stretesky, 2014; Spapens et al., 2014; Shearing, 2015; White, 2009).

This chapter has sought to contribute to this thinking and re-creation. It has done so by examining NEG, a recent development in environmental governance scholarship. The chapter tracked the development of NEG, highlighting a shift away from traditional forms of policing environmental harms, namely regulation, as well as markets and early forms of partnerships. It has outlined the nodal, collaborative, participatory, deliberative and flexible

learning characteristics of NEG and offered some examples of its operation in practice. The benefits of NEG, for addressing transboundary environmental harms, were identified. These benefits specifically included: resource savings, enhancing on ground monitoring of crimes, accessing new resources and expertise to improve governance responses, enhancing chances of compliance (e.g. by encouraging buy-in, internalising environmental norms) and diffusing information and innovation to improve performance.

Despite these potential benefits, it is important to caution against seeing NEG as a panacea. There is still a long way to go to understand when and whether NEG may 'work'. Over the last forty years, the governance response to environmental harms has shifted significantly, but it also remains multi-faceted, with both new and old approaches covering the landscape (Driessen et al, 2012). A good example of this is the current response to climate change, which involves not only market-based instruments, but also enforcement, as well NEG approaches (Dryzek, Norgaard and Schlosberg, 2011). In many ways, both international and domestic environmental governance remains something of a continuing test – keeping what works, and finding new ways to do things better where it doesn't. Mindful of this point, it is arguably important to ask how and in what ways should the future governance of environmental security respond to continuing transboundary environmental problems (De Burca et al. 2013; Holley et al. 2011).

This is a particularly important issue, as we now arguably confront new global challenges in the era of the 'Anthropocene'. This new classification of the modern planetary epoch signifies a new role for humankind: from a species that had to adapt to changes in their natural environment to one that has become a driving force in the planetary system (Biermann, 2014:57). Such developments may call for increased attention on not only making NEG 'work', but also to new ways of policing and governing global problems and systems. Various reform suggestions are being developed (see, for example, Biermann, 2014; Stevenson and Dryzek, 2014), but many questions remain that demand further analysis and consideration for understanding and advancing the future of environmental governance. At least five key questions and issues are outlined below.

First, given that problems like climate change will likely affect entire global systems for generations, scholars could explore how and in what ways we can deepen concepts of environmental harms, to embrace both anthropogenic and more eco-centric notions of environmental harms and victims in enforcement and broader governance systems (Huisman and van Erp, 2013; White, 2011). Second, further attention could be directed to how the current 'less serious' nature of crimes against the environment can be changed to reflect the growing importance and impact of environmental degradation on global society (Huisman and van Erp, 2013; White, 2011). Third, how do we ensure global environmental

problems and the future policing responses account effectively for the potentially disproportionate spread of resources and impacts, not least in developing countries, where limited enforcement capacities, and crimes are deeply embedded in local communities with little alternative sources of income? (Huisman and van Erp, 2013; White, 2011).

Fourth, how may NEG as a conceptual framework for policing environmental harms specifically be analogous to, or serve as a model for, other forms of global policing as a generalized will to security and order? At the most general level, NEG shares with many 'policing' models — particularly community policing — a recognition that control/defense/prevention goes beyond mere enforcement to include prevention, or what Zedner (2007) terms 'pre-crime' responses. Rather it acknowledges that 'multiple sites of authority coexist' (Green 2014: 10) along with multiple sites of provision (Bayley and Shearing, 2001). Thus, it draws attention to the role of individuals, neighbourhoods, and 'environmental' design (Shearing and Stenning, 1985) in the maintenance of order (Johnston and Shearing, 2003; Grabosky and Grant, 2000). As we have seen, NEG offers a generalized set of principles (see design principles developed by Ayling et al., 2009) that have been developed in response to (and accordingly have potential application for addressing) many of the endemic features of policing in a global context, not least multiple jurisdictions and multiple governors. In recognition of the difficulty of traditional enforcement and punishment under such conditions (such as evidence barriers and minimal monitoring), NEG's collaborative, participatory, flexible and adaptive approaches provide guidance for ways in which policing can harness non-government institutions and other forms of social control to contribute to preventing offences and enhance performance of those likely to commit crimes. In short, NEG, like many other emerging global policing models, appears to offer a 'whole-of-society' (van der Spuy and Shearing, 2014) response to crimes (Ayling, 2013; UNODC, 2012).

Fifth and finally, a crucial question that has been raised within the policing literature generally, and this volume, concerns the capitals that nodal players bring to collaborative governance forums. For example, symbolic power that state nodes, such as Police, often possess within networked policing arrangements (Loader, 1997; Loader and Walker, 2007). As with other nodal policing arrangements, the stakeholders who make up NEG arrangements vary considerably in their access to various capitals— to use Bourdieu's (1986) metaphor, including economic capital (Dupont, 2004). As with other nodal systems of governance, the capitals different nodal actors bring with them to the negotiations that characterize NEG collaborations vary considerably from arrangement to arrangement. As Holley et al.'s (2011) results make clear, these negotiations are often underpinned by the different forms of power associated with various capitals. While state nodes very often bring with them considerable capital (particularly financial and symbolic) so do other nodal players. For example, big business often brings to these negotiations considerable financial as well as symbolic capital— in a similar way community based nodes often bring to

negotiating tables considerable capital, most often cultural and social capital. In NEG engagements capitals are seldom monopolised by any one set of nodal players.

These five issues, and indeed many others, demand our attention if we are to ensure the governance of environmental security can respond effectively, efficiently and equitably to the growing global environmental crisis.

Notes

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Bibliography

- Abbott, K. and Snidal, D. (2009) 'Strengthening international regulation through transmittal new governance: Overcoming the orchestration deficit', *Vanderbilt Journal of Transnational Law*, 42: 501–578.
- Andonova, L. (2010) 'Public-private partnerships for the earth: Politics and patterns of hybrid authority in the multilateral system global', *Environmental Politics*, 102:25–53.
- Ayling, J., Grabosky, P. and Shearing, C. (2009) *Lengthening the Arm of the Law: Enhancing Police Resources in the 21st Century*. Cambridge: Cambridge University Press.
- Ayling, J. (2013) 'Harnessing third parties for transnational environmental crime prevention', *Transnational Environmental Law*, 2(2): 339–362.
- Ayres, I. and Braithwaite, J. (1992) *Responsive regulation: Transcending the deregulation debate*. New York: Oxford University Press.
- Bandura, A. (1997) *Self-efficacy: The exercise of control*. New York: WH Freeman and Company.
- Bartel, R. (2005) 'When the Heavenly Gaze Criminalises: Satellite Surveillance, Land Clearance Regulation and the Human-Nature Relationship', *Current Issues in Criminal Justice*, 16(3): 322–339.
- Bayley, D. and Shearing, C. (1996) 'The Future of Policing', *Law and Society Review*, 30(3): 585–606.
- Bayley, D. & Shearing, C. (2001) *The New Structure of Policing*. Washington: National Institute of Justice, U.S. Department of Justice.
- Bisschop, L. (2012) 'Is it all going to waste? Illegal transports of e-waste in a European trade hub', *Crime, Law and Social Change*, 58(3): 221-249.

- and Verhage, A. (2012) 'The complex(ity) of Policing Dirty Crime', *Politiestudies: Tides & Currents of Policing*, 25: 273–290.
- Bourdieu, P. (1986) 'The forms of capital', in J. Richardson (ed.), *Handbook of Theory and Research for the Sociology of Education*. New York: Greenwood. pp. 241–258.
- Börzel, T. (2011) 'Move Closer! New Modes of Governance and Accession to the European Union', *Law and Economics Review*, 2:1-22.
- Braithwaite, J. (2004) 'Methods of Power for Development: Weapons of the Weak, Weapons of the Strong', *Michigan Journal of International Law*, 26: 297–330.
- Bricknel, S. (2010) *Environmental Crime in Australia. Research and Public Policy Series no. 109*. Canberra: Australian Institute of Criminology.
- Brodeur, J.P. (2006) Foreword in J. Wood and B. Dupont (eds.), *Democracy, Society and the Governance of Security*. Cambridge: Cambridge University Press, pp. xi–x.
- Chaffin, B. C., Gosnell, H., and Cosens, B. (2014) 'A decade of adaptive governance scholarship: synthesis and future directions', *Ecology and Society*, 19(3): 56.
- Chhetri, BBK., Overgaard Larsen, H., and Smith-Hal, C. (2012) 'Law enforcement in community forestry: consequences for the poor', *Small Scale Forestry*, 11: 435–452.
- Cole, D. and Grossman, P., (1999), 'When is command-and-control efficient?', *Wisconsin Law Review*, 5: 887–938.
- Cottrell, M. and Trubek, D. (2012) 'Law as problem solving: Standards, networks, experimentation and deliberation in global space', *Transnational Law and Contemporary Problems*, 21: 359–393.
- Cutting, R. and Cahoon, L. (2005) 'Thinking outside the box: Property rights as a key to environmental protection', *Pace Environmental Law Review*, 22: 55–90.
- De Burca, G. and Scott, J. (2006) 'Introduction: New Governance, Law and Constitutionalism', in De Burca, G. and Scott, J. (eds.) *Law and new governance in the EU and the US*. Oxford: Hart Publishing.
- De Burca, G. (2010) 'New governance and experimentalism: An introduction', *Wisconsin Law Review*, 2: 227–238.
- Keohane, R. and Sabel, C. (2013) 'New modes of pluralist global governance', *New York University Journal of International Law & Politics*, 45:723–786.
- Deleuze, G. and Guattari, F. (1987) *A Thousand Plateaus*. Minneapolis: University of Minnesota Press.
- Dorf, M. and Sabel, C. (1998) 'A Constitution of Democratic Experimentalism', *Columbia Law Review*, 98(2):267–473.
- Driessen, P., Dieperink, C., Van Laerhoven, F., Runhaar, H. and Vermeulen, W. (2012) 'Towards a conceptual framework for the study of shifts in modes of environmental governance – experiences from the Netherlands', *Environmental Policy and Governance*, 22: 143–160.
- Duffy, R. (2013) 'Global environmental governance and North–South dynamics: the case of the CITES', *Environment and Planning C: Government and Policy*, 31: 222–239.
- Dupont, B. (2004) 'Security in the Age of Networks', *Policing and Society*, 14(1): 76–91.

- Durant, R., O'Leary, R. and Fiorino, D. (2004) 'Introduction', in R. Durant, R. O'Leary and D. Fiorino (eds.), *Environmental Governance Reconsidered*. Cambridge: MIT Press.
- Elliott, L. (2012) 'Fighting Transnational Environmental Crime', *Journal of International Affairs*, 66(1): 87–104.
- Freeman, J. (1997) 'Collaborative governance in the administrative state,' *UCLA Law Review*, 45:1–98.
- Farber, D. (2005) 'Modular environmental regulation', *Duke Law Journal* 54: 795–912.
- Froestad, J. and Shearing, C. (2013) *Security Governance, Policing and Local Capacity: Advances in Police Theory and Practice Series*. Boca Raton, FL: CRC Press.
- Fung, A. (2006) *Empowered Participation: Reinventing Urban Democracy*. Princeton: Princeton University Press.
- Gess, K. (1964) 'Permanent sovereignty over natural resources', *International and Comparative Law Quarterly*, 13(2): 398–449.
- Gibbs, C., Gore, M. McGarrell, E. and Rivers, L. (2010) 'Introducing Conservation Criminology: Towards Interdisciplinary Scholarship on Environmental Crimes and Risks', *British Journal of Criminology* 50(1):124–144.
- Glasbergen, P., Biermann, F. and Mol, A. (2007) *Partnerships, governance and sustainable development*. Cheltenham: Edward Elgar.
- Grabosky, P. and Gant, F. (2000) 'Improving environmental performance, preventing environmental crime', *Research and public policy series no. 27*. Canberra: Australian Institute of Criminology
- Green, J. (2014) *Rethinking Private Authority: Agents and Entrepreneurs in Global Environmental Governance*. Princeton: Princeton University Press.
- Gunderson, L. and Holling, C. S. (eds.), (2001) *Panarchy: Understanding Transformations in Human and Natural Systems*. Washington: Island Press.
- Gunningham, N., Grabosky, P. and Sinclair, D. (1998) *Smart regulation: Designing environmental policy*. Oxford: Clarendon Press.
- and Sinclair, D., (2002) *Leaders & laggards*. Sheffield: Greenleaf.
- Holley, C. and Shearing, C. (2007), 'Neighbourhood Environment Improvement Plans: Community Empowerment, Voluntary Collaboration and Legislative Design', *Environmental and Planning Law Journal*, 24(2):125–151.
- (2008) *Innovative Governance and Regulatory Design: Managing Water Resources*. Landcare Research No LC0708/137. New Zealand: Landcare Research.
- (2009) 'Environment law, regulation and governance: Shifting architectures', *Journal of Environmental Law*, 21(2):179–212.
- Holley, C. (2010) *Bringing the 'R' word back: regulation, environment protection and NRM*. Canberra: ASSA.
- Hayek, F.A. (1945) 'The use of knowledge in society', *American Economic Review*, XXXV(4): 519–30.
- Head, B. (2005) 'Governance', in Saunders, P. and Walter, H. (eds.), *Ideas and Influence Social Science and Public Policy in Australia*. Sydney: UNSW Press, pp. 44-63.

- Holley, C. and Gunningham, N. (2006) 'Environment Improvement Plans: Facilitative Regulation in Practice', *Environmental Planning and Law Journal*, 23: 448–464.
- and Gunningham, N. (2011) 'Natural Resources, New Governance and Legal Regulation: When Does Collaboration Work?', *New Zealand Universities Law Review*, 24: 309–336.
- Gunningham, N. and Shearing, C. (2011) *The New Environmental Governance*. Abingdon: Earthscan.
- and Sinclair, D. (2011) 'Compliance and Enforcement of Water Licences in NSW: Limitations in Law, Policy and Institutions', *Australasian Journal of Natural Resources Law and Policy*, 15(2): 149–189.
- and Lawson, A. (forthcoming), 'Implementing Law and Collaborative Governance: Water and Natural Resource Management', in P. Martin and A. Kennedy (eds.), *Implementing Environmental Law*. Cheltenham: Edward Elgar.
- (forthcoming) 'Crafting Collaborative Governance', *Environmental Law Reporter*, 45(4).
- Holling, C.S. (ed.) (1978) *Adaptive Environmental Assessment and Management*. Chichester: Wiley.
- Houfu, Y. and Xiaopu, S. (2013) 'Transfer or not Transfer? It is a Question: The Challenges to and Solutions for the Transfer Procedure of Suspected Environmental Pollution Criminal Cases', *Environmental Practice*, 15(3): 271–279.
- Howes, R., Skea, J., and Whelan, B. (1997) *Clean and Competitive? Motivating Environmental Performance in Industry*. London: Earthscan Publications.
- Huisman, W. and Van Erp, J. (2013) 'Opportunities for environmental crime: A test of situational crime prevention theory', *British Journal of Criminology*, 53(6): 1178–1200.
- INTERPOL (2015) *Task forces: National Environmental Security Task Forces 2015*. [Online]. Available at: <<http://www.interpol.int/Crime-areas/Environmental-crime/Task-forces>> [Accessed 27 February 2015].
- Johnston, L. & Shearing, C. (2003) *Governing Security: Explorations in Policing and Justice*. London: Routledge.
- Karkkainen, B., Fung, A. and Sabel, C. (2000) 'After Backyard Environmentalism: Toward a Performance-Based Regime of Environmental Regulation', *American Behavioral Scientist*, 44(4): 690–709.
- Karkkainen, B. (2001) 'Information as environmental regulation: TRI and performance benchmarking, Precursor to a New Paradigm?', *Georgetown Law Journal*, 89:257–370.
- (2002) 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism', *Virginia Environmental Law Journal*, 21: 189–243.
- (2004a) 'Reply, new governance in legal thought and in the world: Some splitting as antidote to overzealous lumping', *Minnesota Law Review*, 89: 471–497.
- (2004b) 'Post-sovereign environmental governance', *Global Environmental Politics*, 4(1): 72–96.

- (2005) 'Panarchy And Adaptive Change: Around The Loop And Back Again', *Minnesota Journal of Law, Science & Technology*, 7: 59-77.
- (2006) 'Information forcing regulation and environmental governance', in De Burca, G. and Scott, J. (eds.), *Law and new governance in the EU and the US*. Oxford: Hart Publishing.
- Kelemen, R. and Vogel, D. (2010) 'Trading places: The role of the United States and the European Union in international environmental politics', *Comparative Political Studies*, 43(4): 427-456.
- Kimani, N. (2010) 'A collaborative approach to environmental governance in East Africa', *Journal of Environmental Law*, 22(1): 27-57.
- Krasna, S. (2001) *Problematic Sovereignty: Contested Rules and Political Possibilities*. New York: Columbia University Press.
- Lazarus, R. (2004) *The making of environmental law*. Chicago: University of Chicago Press.
- Lenox, M. J. and Nash, J. (2003) 'Industry self-regulation and adverse selection: a comparison across four trade association programs', *Business Strategy and the Environment*, 2: 343-356.
- Lewis, M. and Takahashi, M. (2013) 'A prescription for conservation: strengthening Japan's role in curbing the illegal international trade of bear bile for medical use', *Asia Pacific Journal of Environmental Law*, 15: 95-124.
- Lipman, Z. (2013) 'Environmental crime and enforcement in Australia', *Australian Environment Review*, 28(5): 580-585.
- Loader, I. (1997) 'Policing and the Social: Questions of Symbolic Power', *British Journal of Sociology* 48(1): 1-18.
- Loader, I. (2000), 'Plural Policing and Democratic Governance', *Social & Legal Studies*, 9(3): 323-345.
- Loader, I. and Walker, N. (2007) *Civilizing Security*. Cambridge: Cambridge University Press.
- Lobel, O. (2004) 'The renew deal: The fall of regulation and the rise of governance in contemporary legal thought', *Minnesota Law Review*, 89: 342-470.
- (2004) 'Setting the agenda for new governance research', *Minnesota Law Review*, 89: 498-509.
- Loo, T. (2006) *State of Nature*. Vancouver: UBC Press.
- Lubell, M., Sabatier, P., Vedlitz, A., Focht, W., Trachtenberg, Z., and Matlock, M. (2005) 'Conclusions and Recommendations', In: Sabatier, P., Focht, W., Lubell, M., Trachtenberg, Z., Vedlitz, A. and Matlock, M. (eds.) *Swimming Upstream: Collaborative Approaches To Watershed Management*. Cambridge: MIT.
- Lynch, M.J. and Stretesky, P.B. (2011) 'Similarities between green criminology and green science: Toward a typology of green criminology', *International Journal of Comparative and Applied Criminal Justice*, 35(4): 293-306.
- Lynch, M. and Stretesky, P. (2013) 'The distribution of water-monitoring organizations across states: Implications for community environmental policing and social justice', *Policing: An International Journal of Police Strategies & Management*, 36(1): 6-26.

- Lynch, M.J. and Stretesky, P.B. (2014) *Exploring Green Criminology*. Farnham: Ashgate.
- McGinnis, M. (ed.) (1999) *Polycentric Governance and Development*. Ann Arbor: University of Michigan Press.
- McKibbin, W. and Wilcoxon, P. (2002) 'The role of economics in climate change policy', *The Journal of Economic Perspectives*, 16(2):107–129.
- Mol, A. and Sonnenfeld, D. (2000) *Ecological modernisation around the world*. London: Frank Cass.
- Morrison, T., McDonald, G. and Lane, M. (2004) 'Integrating Natural Resource Management for Better Environmental Outcomes', *Australian Geographer*, 35(3): 243–259.
- Najam, A., Papa, M. and Taiyab, N. (2006) *Global environmental governance: A reform agenda*. Winnipeg: IISD.
- Nellemann, C., Henriksen, R., Raxter, P., Ash, N. and Mrema, E. (eds.) (2014) *The Environmental Crime Crisis, threats to sustainable development from illegal exploitation and trade in wildlife and forest resources*. [pdf]. United Nations Environment Programme and GRID-Arendal: Nairobi and Arendal, viewed 27 February 2015, <http://www.unep.org/unea/docs/rracimecrisis.pdf>.
- Okereke, C., Bulkeley, H. and Schroeder, H. (2009) 'Conceptualizing climate governance beyond the international regime', *Global Environmental Politics*, 9(1): 58–78.
- O'Malley, P. (2011) From Risk to Resilience. Technologies of Self in the Age of Catastrophes. *The Carceral Notebooks*, 7:41–68.
- O'Rourke, D. and Macey, G. (2003) 'Community Environmental Policing: Assessing New Strategies of Public Participation in Environmental Regulation,' *Journal of Policy Analysis and Management*, 22(3): 383–414.
- Orts, E. (1995) 'Reflexive environmental law,' *Northwestern University Law Review*, 89: 1227–1340.
- Deketelaere, K. (ed.) (2001) *Environmental contracts: Comparative approaches to regulatory innovation in United States and Europe*. London: Kluwer.
- Osborne, D. and Gaebler, T. (1993) *Reinventing government: How the entrepreneurial spirit is transforming the public sector*. New York: Plume.
- Ostrom, E. (2010) 'Beyond markets and states: Polycentric governance of complex economic systems,' *American Economic Review*, 100: 641–672.
- Overdevest, C. and Zeitlin, J. (2014) 'Assembling an experimentalist regime: Transnational governance interactions in the forest sector', *Regulation and Governance*, 22-48.
- Pink, G. and Lehane, J. (2011) 'Environmental Enforcement Networks: Development of a Network Evaluation Matrix' paper presented at the 9th International Conference on Environmental Compliance and Enforcement, British Columbia, Canada.
- Rhodes, R.A. (2007) 'Understanding governance: Ten years on', *Organization Studies*, 28(8): 1243–1264.
- Roma, A. (2006) 'Energy, money, and pollution,' *Ecological Economics*, 56: 534–545.
- Sabel, C., Fung, A. and Karkkainen B. (1999) 'Beyond backyard environmentalism', *Boston Review*, October/November: 1–17.

- Scheurman, W. (2004) 'Democractic Experimentalism or Capitalist Synchronization - Critical Reflections on Directly-Deliberative Polyarchy', *Canadian Journal of Law and Jurisprudence*, 17: 101–128.
- Scott, K. (2011) 'International environmental governance: Managing fragmentation through institutional connection', *Melbourne Journal of International Law*, 12(1): 177–216.
- Shearing, C. and Stenning, P.C. (1985) 'From the Panopticon to Disney World: The development of discipline', in Doob, A.N. & Greenspan, E.L. (eds.), *Perspectives in Criminal Law: Essays in Honour of John Ll. J. Edwards*. Toronto: Canada Law Book. pp.335-349.
- (1993) 'A Constitutive Conception of Regulation', in Braithwaite, J. and Grabosky, P. (eds). *Business Regulation and Australia's Future*. Canberra: Australian Institute of Criminology. pp. 67–79.
- (2013) 'Whither Criminology' speech presented at Ottawa University, 30 October 2013.
- (2015) 'Criminology and the Anthropocene', *Criminology and Criminal Justice* 15.
- Shepston Overly, M. (2010) 'When Private Stakeholders Fail: Adapting Expropriation Challenges in Transnational Tribunals to New Governance Theories', *Ohio State Law Journal*, 71: 341–380.
- Slaughter, A. (2004) *A new world order*. Princeton: Princeton University Press.
- South, N. and Brisman, A. (eds.) (2013) *The Routledge International Handbook of Green Criminology*. London: Routledge.
- Spapens, A.C.M., White, RD. and Kluin, M. (eds.) (2014) *Environmental Crime and its Victims. Perspectives within Green Criminology*. Farnham: Ashgate.
- Steiner, A. (2007) 'Foreword', in United Nations Environment Programme, *Networking Counts: Combating illegal trade in ozone depleting substances*. Paris: United Nations Environment Programme.
- Stewart, R. (2001) 'A new generation of environmental regulation?' *Capital University Law Review*, 29: 21–182.
- Tomkins, K. (2009) 'Police, law enforcement and the environment', in White, R. (ed.) *Environmental crime: A reader*. Devon: Willan Publishing. pp. 515–527.
- Trubek, D. and Trubek, L. (2007) 'New Governance & Legal Regulation', *Columbia Journal of European Law*, 13: 540–564.
- United Nations Office of Drugs and Crime (2012) *Wildlife and Forest Crime Analytical Toolkit*. revised edition. [pdf]. United Nations: New York. Viewed 27 February 2015, http://www.unodc.org/documents/Wildlife/Toolkit_e.pdf.
- United Nations Interregional Crime and Justice Research Institute (2015) *Environmental Crimes*. Viewed 27 February 2015, <http://www.unicri.it/topics/environmental/>.
- Van der Heijden, J. (2013) 'Is new governance the silver bullet? Insights from the Australian buildings sector', *Urban Policy and Research*, 31(4): 453–471.
- Van der Spuy, E. and Shearing, C. (2014) 'Curbing the Killing Fields: Making South Africa Safer and Less Criminal', in Rotberg, R. (ed.), *Reconfiguring Mandela's Legacy: South*

- Africa's Contested Future*. Waterloo: CIGI. pp.237-258.
- Von der Porten, S. and de Loë, R. (2013) 'Collaborative approaches to governance for water and Indigenous peoples: a case study from British Columbia, Canada', *Geoforum*, 50: 149-160.
- Walker, N. (2006) 'EU constitutionalism and new governance', in De Burca, G. and Scott, J. (eds.) *Law and new governance in the EU and the US*. Oxford: Hart Publishing. pp. 15-36.
- Weir, L., O'Malley, P. and Shearing, C. (1997) 'Governmentality, Criticism, Politics', *Economy and Society*, 26(4): 501–517.
- White, R. (2009) 'Researching Transnational Environmental Harm: Toward an Eco-Global Criminology', *International Journal of Comparative and Applied Criminal Justice*, 33(2) 229–248.
- White, R. (2011) 'Environmental law enforcement: the importance of global networks and collaborative practices', *Australasian Policing: A journal of professional practice and research*, 3(1): 12–16.
- White, R. (2012) 'NGO engagement in environmental law enforcement: critical reflections', *Australasian Policing: A journal of professional practice and research*, 4(1): 4-7.
- White, R. (2013a) 'Environmental crime and problem-solving courts', *Crime, law and Social Change*, 59: 267–278.
- White, R. (2013b) 'What is to be done about environmental crime?', in Arrigo, B. and Bersot, H. (eds.), *The Routledge Handbook of International Crime and Justice Studies*. London: Routledge.
- Wijbenga, B., Ruessink, H., de Wit, A. and Kapitein, P. (2008) 'Environmental Policing in the 21st Century — Background, Organisation & Experience in The Netherlands', paper presented at the Eighth International Conference on Environmental Compliance and Enforcement, Cape Town, South Africa.
- Wilkinson, G., Schofield, M. and Kanowski, P. (2014) 'Regulating forestry – experience with compliance and enforcement over the 25 years of Tasmania's forestry practices system.' *Forest Policy and Economics*, 40: 1–11.
- Wood, J. and Shearing, C. (2007) *Imagining Security*. Cullompton: Willan Publishing.
- Yu, X. (2011) 'Transboundary Water Pollution Management: Lessons Learned from River Basin Management in China, Europe and the Netherlands', *Utrecht Law Review*, 7(1): 188–203.
- Zedner, L. (2007) 'Pre-crime and post-criminology?', *Theoretical Criminology*, 11(2): 261-280.