THE SOCIAL SYSTEMS NETWORK: SYSTEMS- THEORETICAL PERSPECTIVES AND ENVIRONMENTAL GOVERNANCE

Delon Alain Omrow Environmental Studies, York University delonominfo@gmail.com

ABSTRACT

Parsonian social systems perspectives can enhance our thinking about the environment. Using twentieth-century sociological theory, I explore the utility of integrating social system frameworks in various environmental management initiatives. Principles of communication and consensus formation among various social actors should be the goal of such initiatives and this paper critiques the environmental governance literature, recognizing opportunities to utilize a social systems lens when trying to co-manage environmental governance in a globalized economy.

Keywords: Environmental Management; Co-Management; Traditional Ecological Knowledge; Social Systems.

INTRODUCTION

What role is the state poised to play in the governance of the environment? In sociology, the Marxist tradition, for example, has been very critical of governmental institutions and social arrangements, highlighting the perils of capitalist industrialization, self-expansion and accumulation and growth (Dunlap et al. 2002). The neo-Marxist school of thought, in a similar vein, points towards the societal-environmental dialectic and the proverbial treadmill of production (Schnaiberg 1980). Despite the indelible imprint neo-Marxism has left in the field of environmental sociology, scholars have turned their focus toward twentieth-century sociological theories. In their book, Sociological Theory and the Environment: Classical Foundations, Contemporary Insights, Dunlap et al. (2002) suggest that Parsonian/social systems theories, critical/Frankfurt School theories and World-system theories are of inestimable worth in contemporary thinking about the environment. As such, the purpose of this article is fourfold: I begin with an exploration of systems-theoretical perspectives, exploring the utility of this social theory in the realm of environmental politics; this is followed by a critique of the environmental governance literature; finally, I invoke systems theory to explore some innovative initiatives in Canada, exploring the manner in which nation-states work in tandem with civil society to fossick for equitable and sustainable environmental governance.

Social Systems Theory

Elim Papadakis' work entitled *Social theory and the Environment: A Systems-Theoretical Perspective* (2002) serves as a tenable launchpad from which innovative approaches to understanding environmental problems can be presented. A question of burning interest in his work is, simply, can political institutions implement policies and practices such as sustainable development? Moreover, are such policies and practices effective and if so, effective for whom? Presenting a dichotomy between "objectivist" and "subjectivist" analyses of "interests", the author proceeds by investigating examples of social change as a result of

social systems and Parsonian sociological thought. Talcott Parsons (1951) asserted that all social systems sought a form of equilibrium and that society is made up of different, albeit interrelated parts. All of those included in this society are social actors who interact with each other, in an attempt to maintain the system. What is more, these interactions are underpinned by hopes of achieving consensus in values through action (Papadakis 2002). Parsons' theory of social systems outlines four "functional prerequisites": adaptation, goal attainment, integration, and pattern maintenance. Parsons, however, had his detractors, many of whom claimed that his emphasis on *consensus* was not backed by empirical evidence and that he obfuscated the role conflict plays in driving social change (Dahrendorf 1959; Coser 1956).

Papadakis (2002), however, sees promise in Parsonian thought and relies on Niklas Luhmann's (1980; 1990) reformulation of Parson's theory of social systems in which multiple subsystems operate through "communication" rather than "action", a cornerstone of Parson's theory. Luhmann's emphasis on "communication" opens limitless vistas of inquiry into how political institutions can address environmental problems and Papadaskis cleverly explains how groups and organizations- each of which are motivated by incongruent interests and ideologies (development and economic growth vs. sustainable development and environmentalism)- can develop strategies for constructive dialogue. Despite certain actors exuding self-referentiality with respect to their own interests, techniques such as "externalization" and "historization" engender collaborative efforts to address ecological problems. Consider the role "public opinion" plays in transforming self-reference into communication (Papadakis 2002). If we apply this principle to the intractable problems of natural resource depletion and the exploitation of the environment, we begin to see how a systems-theoretical perspective adds а richer texture to the environmental management/governance discourse.

My own research into various forms of environmental governance can be theoretically enriched by a systems-theoretical perspective. The self-referentiality of governmental actors has been challenged by "public opinion" and the practices of communication between various social actors in a social system. Through constructive dialogue, social systems achieve equilibrium through interactions and the attainment of a consensus in values, especially with regards to governing the environment. Concepts such as eco-governmentality and deliberative democracy feature strands of the systems-theoretical perspective. The former is usually peppered throughout the literature pertaining to postmodern social/environmental movements. Ulloa (2005) defines eco-governmentality as local discourses, representations, knowledges and practices that direct social actors to act in accordance to the principles of sustainable development. Most importantly, though, eco-governmentality introduces indigenous peoples to the global scale, enabling them to inject their knowledge into pervasive production and consumption circuits. It bears emphasizing that proponents of this postmodern framework take heed of the global, asymmetrical power relations which engender discursive contexts dominated by Western values and interests. Eco-governmentality endeavours to dismantle such universalizing governance paradigms, acknowledging that all humans, irrespective of their race, gender, ethnicity and class, share a common future and the right to resolve environmental problems (Ulloa 2005).

Deliberative democracy has also been welcomed into the realm of environmental politics of late. Taking heed of the plurality of environmental values, proponents of deliberative democracy look to communication via mediation; stakeholder group engagement; citizen forums; and citizen referendums (Strange 1996). Much of the extant literature on deliberative democracy reveals that it offers ample opportunity for the embrace of diverse values in the

public sphere. This perspective facilitates increased opportunities for citizen engagement, catalyzing an ongoing critical dialogue of the principal-agent form of representation, a staple of liberal democracies. Examining the manner in which politically marginalized groups are systematically excluded from decisions regarding the governance, or management, of the environment, deliberative democracy attempts to compensate for this via the promotion of inclusiveness. A systems-theoretical perspective can be applied to both eco-governmentality and deliberative democracy, explaining the nuances of communication and the maintenance of consensus vis-à-vis societal values within social systems. Before I present and example of environmental governance through the systems-theoretical perspective, let us turn to the limitations of common environmental governance strategies.

The Limitations of Environmental Governance

Before the problematics inherent in environmental governance are exposed, it seems most befitting at this juncture to define environmental governance. Lemos and Agrawal (2006), upon conducting a comprehensive literature review on environmental governance, posit the following definition: interventions which seek to change environment-related incentives, institutions, knowledge, behaviours and decision-making. The authors comment, "Environmental governance refers to the regulatory processes, mechanisms and organizations through which political actors influence environmental actions and outcomes" (Lemos and Agrawal 2006: 298). Lemos and Agrawal's definition is distinctive from conventional definitions of environmental governance insofar as their notion of governance transcends the purview of government, acknowledging actors such as communities and NGOs. Much of the extant literature on environmental governance features three salient themes which warrant attention: globalization, decentralized environmental governance and market- and individualfocused instruments (Lemos and Agrawal 2006).

Globalization and Environmental Governance

Globalization and environmental governance have sparked much debate in academic circles. Appadurai (1996) explains that globalization is the interconnectedness of the world across environments, societies and economies. Simply put, the literature on globalization explores the flows of money, investments, images, people, technology and information (Spaargaren et al. 2006). This interconnection produces far-reaching implications, especially for the environment. Consider, for example, economic globalization and its impact on the environment at the local, regional, national and global level. Lemos and Agrawal (2006) argue that the process of economic globalization facilitates the intensification of the depletion of natural resources and waste production. Moreover, economic globalization has the propensity of denuding nation-states of their resources, whilst contributing to socio-economic inequalities. While there have been some documented benefits of globalization- namely, the diffusion of international standards and environmental policies to which all nations must abide, and the participation of actors of developing nations- theorists also underscore the weaknesses of global environmental governance (Appadurai 1996). In regard to the effectiveness of such regimes, the literature makes it quite clear that governing the commons is no easy task. Ford (2003) states that environmental governance is nothing more than a chimera because international regimes feature democratic deficits insofar as certain countries participating in the negotiation of the governance of the commons may not be included in certain decision-making processes. Similarly, asymmetrical power relations in decisionmaking spheres may facilitate the imposition of developed countries' methods of environmental governance. Finally, and most noteworthy, global governance regimes lack the ability to enforce the myriad provisions and conditions of international environmental agreements (Hempel 1996). Juillet (2001) speaks to this issue, asserting that the process of globalization has detrimental effects on the environment because global institutions are prevented from effectively mitigating ecologically devastating practises and activities. Furthermore, governance regimes may impose economic and political projects on unsuspecting nation-states, curtailing their territorial sovereignty by way of preventing them from protecting their environmental resources.

The inability of nation-states to devise international environmental governance mechanisms has been a topic of intense debate among students of globalization. Spaargaren et al. (2006) propound the concept of 'environmental flows' to delineate how challenging governing the environment in a globalized world is. According to the authors, 'environmental flows' encompass the flows of solid waste, energy, water, biodiversity, green products, etc. A most poignant instantiation of the 'environmental flows' concept is the transboundary movement of pesticides and pollutants around the globe. Industrial ecologists, for instance, contend that human beings are interpreted as units in a web of life, consuming, processing and excreting 'environmental flows' (Ayres and Ayres 1996). Janicke (2006) also speaks to the issue of 'environmental flows', enumerating the four stages that require governance. According to the author, the first stage- the input of environmental resources- requires governance, ensuring that the input of water, energy, land and other resources required by industrialized countries does not threaten the planet's eco-systems. Secondly, the conversion process- which entails the production and consumption of the aforementioned resources- needs to be properly regulated, preventing resource exploitation. Thirdly, governance is required to manage the output of negative environmental effects such as fugitive emissions, the production of waste and direct depositions. Finally, governance is needed to ensure the integrity of the environmental state insofar as the loss of landscape, resources and species is prevented.

The establishment of international regimes dedicated to other global environmental concernsclimate change, for example- also leave much to be desired in the global community. Consider two international treaties: the 1992 Framework Convention on Climate Change and the 1997 Kyoto Protocol. Parson (2001) avers that both treaties lacked a coherent attempt to control the emission of greenhouse gases, as the major emitters abstained from ratifying these treaties. The Montreal Protocol, on the other hand, in conjunction with its amendments, successfully curtailed the emission of ozone-depleting substances by approximately 80 per cent since 1986. However, another problem has emerged to countervail the success of the Montreal Protocol: the black market in ozone-depleting substances in a globalized economy.

The globalization of pollution poses immense challenges to global environmental governance. From Chernobyl to Bhopal, it is apparent that the movement of pollutants is a threat to the environment and all of humanity. Consider, for instance, the sporadic and precarious manner in which pollutants travel: toxics flow by air, water, the food chain, and the media. Paehlke (2001) explains how the long-range transport of air pollutants (LRTAP) problematizes environmental governance. The movement of such toxics is alarming: "oxides of nitrogen and sulphur move from Britain to Sweden and from Ohio, Indiana, and Illinois into Ontario, Quebec, Nova Scotia, New York and New England. Chemicals evaporate readily in warmer climates, travel on air currents and fall as snow or rain" (Paehlke 2001: 93). In a related vein, empirical evidence from the late 1980's reveals that a majority of Inuit women residing in northern Labrador had their breast milk contaminated with pesticides that were banned in approximately

thirty-four countries nearly twenty years ago (Paehlke 2001). Scholars of 'environmental flows' reveal that PCBs, also, are absorbed by plankton, who are then consumed by fish who, in turn, end up in the fatty tissue of seals, which serve as a primary source of protein for the Inuit in the Arctic (Westra 2008). Clearly, then, governing the flow of these pesticides is virtually impossible, as these chemicals traverse territories via large bodies of water, air currents and the food chain.

Decentralization and Environmental Governance

The decentralization of environmental governance has garnered much attention, forcing scholars to heed the changes taking place at subnational levels in nation-states. Lemos and Agrawal (2006) point out that the decentralization of environmental governance is embodied through a concerted effort of the state to include lower-level administrative units and social groups into the governance of the commons. The impetus behind this dramatic shift towards decentralization stems from an utter loss of faith in the state to effectively manage the environment. This loss of faith is attributed to the realization that nation-states seemingly lack the resources required to regulate their respective environs (Eisner 2007). Moreover, the shift towards decentralized forms of governance may be imputed to an acknowledgement that effective governance is contingent upon greater participation of civil society (Lemos and Agrawal 2006). According to Manor (1999), there are three reasons why the decentralization of environmental governance is in vogue: firstly, decentralization engenders greater efficiencies with respect to processes of governance because it facilitates healthy competition among subnational units; secondly, decentralizing governance brings the decision-making process closer to those members of civil society affected by governance, stimulating higher levels of participation and accountability; finally, a move towards decentralization enables decision-makers to heed, and embrace, the special knowledge of certain communities regarding the management and regulation of their natural resources. More interestingly, though, is the argument put forth by Agrawal (2001), who fervently believes that decentralization transforms certain subnational unit's socio-political position vis-a-vis the use of natural resources and power. The author aptly points out:

"Decentralized governance can be seen as effecting at least three sets of changes. The first set of changes concerns how decision makers in lowerlevel units in a territorial-administrative hierarchy relate to those at higher levels. A second set of issues is linked with the ways local decision makers relate to their constituents. However, a third aspect of decentralized governance- alterations of the subjective relationships of people with each other and with the environment as part of changing relationships of power and governance-is also crucial to understand outcomes" (Agrawal 2001:210).

Distinctive trappings of decentralization include the establishment of community-based user groups; the reconstitution of civil society's responsibilities in new institutional arrangements; and finally, tropes of capacity building, local knowledge and individual rationality. Parson (2001) also underscores the ostensible strengths of decentralization, arguing that decentralized environmental governance facilitates the political accessibility of local government, thus reducing the government's inertia, whilst maximizing political efficacy. In other words, decentralization transforms the role of local jurisdictions, ensuring that detailed knowledge possessed by the affected community is used and included in the process of environmental decision-making. A corollary of decentralization, then, is multi-level governance. Such governance schemes devolve power onto other state actors and non-state actors.

Despite the promise of the decentralization framework, Stevis and Bruyninckx (2006) investigate the 'hybridization' of environmental governance. The authors comment, "There is a great deal of hybridization between formerly distinct entities. Roles and responsibilities formerly reserved for (nation-) state actors are fulfilled by market actors and civil society groups and organizations and vice versa" (Stevis and Bruyninckx 2006:131). The term 'hybridization' has occupied the pages of the vast literature on decentralization. Eisner (2007), for example, uses the term to delineate the manner in which environmental policymaking, and its attendant uncertainty, is handled. The author intimates that the process of environmental policymaking ushers in extreme complexity. This is because policymakers are forced to make pertinent decisions amid a dynamic environment which features new technologies, evolving scientific knowledge and the proliferation of multiscalar pollution. Despite decentralization's endeavour to disperse power and decision-making through multilevel governance, examples of powerful state bodies trying to further their own agenda, enhancing their respective political positions, abound. The politics of exclusion appear to be a leitmotif in decentralized governance, too. Stevis and Bruyninckx (2006) reveal that the rhetoric of decentralization is nothing more than a smokescreen, as environmentalists, NGOs and local communities usually have limited access to the negotiation of economic and environmental decision-making.

Market-and Agent-Focused Instruments and Environmental Governance

A salient manifestation of environmental governance today, market-and agent-focused instruments (MAFIs) have become widespread, creating new vistas of management of the global commons. Somewhat similar to decentralized governance, MAFIs are predicated on the notion of voluntary incentives. The difference between decentralized nodes of governance and MAFIs, according to Cashore (2002), is the fact that the latter is not necessarily concerned with hierarchically organized, regulatory control or participatory structures. Rather, the objective of MAFIs is to facilitate individual incentives, encouraging the generation of environmental policy-making (Tews et al. 2003). What is more, a marked difference between MAFIs and decentralized governance is the source of their legitimacy and authority. Consider, for example, MAFIs' utilization of market exchanges and market incentives to encourage environmental compliance- a purported strength of this new approach. Esiner (2007) also speaks to this issue, intimating that market-based approaches create ample opportunity for economic incentives for innovation, voluntary pollution reductions and emerging, state-of-the-art technologies.

Some of the most common MAFIs today include eco-taxes and subsidies based on market incentives; voluntary agreements; certification; eco-labelling; energy taxes; tradable permits, and informational systems. The philosophical underpinning of these new strategies is the centrality of individual preferences, and assumptions about the self-interested behaviour of economic agents (Tews et al. 2003). Perhaps one of the most common manifestations of a MAFI, environmental taxes aim to alter the unsustainable practises in which agents engage. Lemos and Agrawal (2006: 212) comment on the utility of environmental taxes:

"Taxes on commodities and services, such as energy, nutrients used in agriculture, or tourism, are enacted in the belief that existing markets do not fully incorporate the externalities associated with the production and use of these commodities and services and that taxes are an effective mechanism to raise revenues to offset damages associated with the overexploitation of underpriced resources". In a similar vein, voluntary agreements are now in vogue, facilitating negotiations to meet environmental targets: higher energy efficiency, lower emissions and a reduction in the amount of waste produced- to name just a few. Voluntary agreements have gained much momentum of late because they pre-empt legal regulation. The antecedents of voluntarism, much like that of decentralization, stem from utter dissatisfaction with the regulatory control by the state (Wulfhorst and Haugestad 2006). Harrison and Antweiler (2002) suggest that the salience of voluntarism amid global environmental governance reveals that this trend is gradually replacing traditional 'command and control' policies. It is worthy of mention, too, that the role of industry is being reconstituted as environmental measures- in the European Union, for example- are beginning to put to rest the 'though shalt not' approach, in favour of a 'let's work together' approach (Harrison 2001). This paradigmatic shift engenders significant implications for industry actors, as it underscores that industry should make a concerted effort to be a part of the solution.

Despite the laudable efforts of eco-labelling and voluntary agreements, students of governance should not be lulled by these ostensible solutions to looming environmental problems. Gowdy and Walton (2003) review the effects of these initiatives, illuminating their weaknesses. As regards eco-labelling, the authors state that the labelling of fair-trade coffee can be rather difficult for developing countries. For instance, enlisting in the services of private agencies for the certification process demands substantial funds and the investment of time, neither of which farmers in developing nations have access to (Gowdy and Walton 2003). What is more, the effects of eco-labelling have been quite unprepossessing, as fairtrade coffee only accounts for approximately 1 percent of the global trade of coffee. The underpinnings of the eco-labelling scheme stem from the belief that consumers will express a preference for 'greener products' amid the myriad choices the market puts forward. This belief may be true, as fair-trade coffee upholds values of solidarity, ecology and fairness. However, some studies evince that this unwavering faith in consumers' altruism- their willingness to buy 'greener products- is unsound. Harrison and Antweiler (2002), for example, argue that consumer demand for 'green' products has declined in North America and Europe because consumers perceive a decline in quality, prompting them to purchase comparably priced products which are not 'green'. Also, by virtue of accounting for 1 percent of the global coffee trade, eco-labelling may be nothing more than a perfunctory attempt at governance. Marshall (2008) suggests that it is quite difficult to measure the efficacy of ecolabelling programs because there is a dearth of data pertaining to the environmental burden unlabelled products pose throughout their life cycle. Similarly, some producers have opposed the application of eco-labels out of fear that it could negatively affect their market share.

A single lesson that one could glean from the literature on MAFIs is that such initiatives feature fundamental flaws with respect to the process of governance. For example, cap-and-trade systems have been heralded as a tenable solution to the problem of the emission of pollutants. The logic of the system is as follows: regulators determine an acceptable level of pollution, issuing credits which permit the release of pollutants. The release of pollutants must comport with prescribed levels and the credits can be traded, sold and saved for future use- affectionately referred to as 'pollution banking' (Kettl 2002). Regulation of these firms is manifested via periodic assessments during which the firms provide regulators with the credits accounting for their emissions. The firms, thus, incur fines if they produce excess pollution. At first blush, the system seems to provide incentives for firms to reduce the amount of pollution they produce, eliminating pollution taxes and encouraging firms to go beyond regulatory standards. However, tradable permits have been subjected to harsh criticisms. Cap-and-trade systems promote, literally, the right to pollute via the allocation of

credits. What is more, there has been a growing concern among scholars that the trading and sale of credits may engender unfavourable dynamics between firms, resulting in higher levels of pollution in 'hot spots' (Eisner 2007). This, of course, could be extremely disadvantageous for certain firms and the communities living in their vicinity.

Concomitantly, MAFI schemes such as the cap-and-trade system prompt the establishment of monitoring systems such as environmental management systems (EMS), 'self-regulation' and audits by third parties (Whelan and Oliver 2005). An EMS is essentially an application of total quality management, devised by corporations. These management systems enable corporations to assess their current environmental performance; identify their limitations; and finally, assign responsibility to certain actors who will undertake the steps required to improve the corporation's performance (Eisner 2007). Thus, a company utilizing an EMS is expected to gather data pertaining to its performance, ensuring that it is meeting its objectives. Despite the ostensible accountability these initiatives offer, a wealth of studies have demonstrated that monitoring systems are embroiled in controversy. Consider, for example, the Environmental Protection Agency's 33/50 program, The Accelerated Reduction/Elimination of Toxins (ARET) Challenge and ISO 14000 standards. In these programs, the participating actors are expected to commit to the reduction of harmful substances, but are not necessarily required to meet a performance standard per se. Clapp (1998) reveals some of the limitations of this initiative. Acrimonious debates ensue over the ISO's capacity to meet environmental goals such as the implementation of clean production technologies in both industrialized and less industrialized countries; the handling of hazardous waste; and the transfer of these improved technologies to developing nations. Some scholars have gone so far as to suggest that ISO standards are merely a manifestation of contemporary 'green washing' because these standards have been flouted by many nations, particularly Africa and Latin America (Lynch and Stretesky 2003). Clapp (1998), furthermore, asserts that developing nations do not have as much representation in organizations like the ISO, in contradistinction to their industrialized counterparts. This is due to the vitiated participatory elements of ISO 14000 standards. In other words, developing countries have not been included in the design of the ISO 14000, resulting in their exclusion from global environmental governance.

A majority of developing countries simply lack national-standard setting mechanisms or are unable to afford to attend certain meeting, leaving them at the whim of developed countries' decisions. In fact, the World Wide Fund for Nature has charged the ISO with deliberately excluding developing countries' standards and insights from certain standard-setting processes (Clapp 1998). For instance, in 1993, only two developing nations- Cuba and South Africa- were represented at the TC 207 meetings. These meetings were extremely important, as they set the stage for the development of the ISO standards. As the years progressed, the inclusion of developing nations in the decision-making process remained unprepossessing: in 1995, a mere six developing countries were invited to attend the Oslo conference. Clapp (1998: 306) observes, "while 92 percent of industrialized countries were present at the Oslo meeting and voted on the standards, only 16 percent of developing countries were present and voting". Scholars argue that much work must be done in order to make the ISO a more inclusive entity. This can be achieved by reducing the costs of attending technical committee and plenary ISO meetings. Some nations have made rapid strides: during the 1995 Oslo meeting, the Netherlands and Finland contributed to the Committee on Developing Country Matters (Devco) assistance program, an initiative dedicated to the promotion of environmental management in developing countries. The program raises funds from various donors, attempting to facilitate inclusive participation (Begley 1996).

The Social Systems Network and Environmental Governance

The aforementioned section highlights some of the challenges inherent in environmental management and governance. The glaring lack of a systems theory approach to globalized and decentralized environmental governance and market-and individual-focused initiatives reveals how constructive dialogue is inhibited in the global community. In other words, divergent interests are not reconciled and a consensus of values is never reached between the state, members of civil society, NGOs, etc. In this section, I invoke systems theory to explore some innovative initiatives in which nation-states work in tandem with civil society to fossick for equitable and sustainable environmental governance. No example of social systems environmental governance is as potent as that of the interpolation of Traditional Environmental Knowledge (TEK) into the sustainable development discourse. According to McGregor (2000), TEK has received much attention over the last two decades, providing ample opportunity to apply systems-theoretical perspectives. The centrality of TEK is now underscored in the literature pertaining to environmental governance. McGregor (2000:78) defines TEK as, "a body of knowledge built up by a group of people through generations of living in close contact with nature. It includes a system of classification, a set of empirical observations about the local environment, and a system of self-management that governs resource use". TEK is a governance paradigm, predicated upon an authority system which features co-management and rules pertaining to the use and respect of resources, and an obligation to share.

Aboriginal Peoples in Canada

Co-management initiatives between local communities and state-level agencies are the quintessential example of systems-theoretical perspectives in practice. Equilibrium in the form of environmental governance is achieved through a consensus in values- in this case, Canada's environmental assessment process. Canada, through the systems-theoretical lens, serves as a social system in which multiple subsystems operate through "communication". The Federal Government of Canada has its own agenda vis-à-vis development and economic growth, but works alongside indigenous populations, decentralizing networks of environmental governance.

In 2016, the government of Canada established an Expert Panel to engage in consultations with indigenous peoples so that their trust and confidence in Canada's environmental review processes could be restored (Price 2017).

One finding from the panel of particular import is its emphasis on co-management initiatives and the role of impact assessments (IA). Specifically, such assessments should acknowledge, and support, indigenous laws and epistemologies, integrating TEK into governance and processes. Mae Price (2017), of JFK Law Corporation, argues that IA should not be implemented in a top-down manner, but through communicating with indigenous communities. In *Commentary's* blog post, Price (2017, para 4) states "Indigenous Peoples should have the ability to adapt the process to reflect their own traditions, customs, law and aspirations". This suggests that co-management of IA should clearly emphasize the participation of both indigenous groups and the federal government. Having attended one of the seminars on the evolution of Canada's environmental laws and revision of its environmental regulatory regime, Price notes that the term co-management was bandied about, but with no definitive definition as to what such management entails, especially in the context of Canadian environmental law and environmental governance. The author, furthermore, observes that co-management usually encompasses decision-making exercises between government and indigenous communities and the manner in which both parties demonstrate their respective expertise in the field of environmental management. Luhmann's (1980; 1990) reformulation of Parsonian social systems can be applied to the debates unfolding presently in Canada's federal government, as multiple subsystems are working together through "communication" so that a constructive dialogue can take place between different social actors representing different groups and interests.

While there are some challenges with Canada's environmental assessment process, Price refers to a successful example of co-management: The Archipelago Management Board (AMB).

Comprised of members representing the government of Canada and the Haida Nation, the AMB governs the Gwaii Haanas National Park Reserve by way of consensus. Price (2017, para 10) explains: "neither party can manage or develop the park without the consent of the other. If disagreement arises between the members of the AMB, the decision will be referred to the council of the Haida Nation and the Government of Canada to attempt to negotiate and reach an agreement. However, the board must reach agreement before it can proceed with any action".

The author proceeds by explaining that co-management also refers to events where the comanagement panel doesn't possess the authority to make decisions, but is advisory in nature. Another shining example of co-management is that of British Columbia's governance over conservancy areas. Again, management plans are guided by a systems-theoretical perspective, fostering organizational and institutional values of communication and consensus in values. This framework, also, is followed by myriad co-management boards established under the land claims agreements in Canada. As such, Canada's environmental assessment process can learn much from the structure of the AMB and the management plans in British Columbia.

CONCLUSION

To recapitulate, this article explores the application of twentieth-century sociological theories- namely, social systems theories- to the realm of environmental governance. I began with an exploration of systems-theoretical perspectives, exploring the utility of this social theory in environmental politics; this was followed by a critique of the environmental governance literature; Lastly, I invoked systems theory to explore some innovative initiatives in which nation-states work in tandem with civil society to fossick for equitable and sustainable environmental governance.

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BIOGRAPHY

Delon Alain Omrow earned his PhD at York University, specializing in Green Criminology, Cognitive Injustice, Discourse and Frame Analysis. His dissertation was a critical analysis of the discourses surrounding the Indigenous peoples of Guyana and contemporary conservation efforts, linking cognitive injustice to both social and environmental injustice. He currently teaches in the Equity Studies Department at York University in Ontario, Canada.

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