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Shifts in environmental governance in Canada: how are citizen environment groups to respond?

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Abstract. During a period when the relationship between government agencies and citizen environmental monitoring activities is shifting, this paper examines the nature of the relationship between government and citizen stewardship, by describing some citizen monitoring initiatives in Ontario, Canada. The authors begin by characterizing the changing nature of environmental governance by focusing specifically on the complexity surrounding the relationship between government administrative reform, demands for improved and increased environmental monitoring, and the role and function of citizens in monitoring activities. Then, building on the experience of one citizen-based environmental organization, Citizens' Environment Watch, as well as on two other local examples, they document possible new forms of collaboration that retain government responsibility while building community authority, knowledge, and power to improve local environmental quality. Suggested remedies include a recognition and public articulation of what government should do and what it does not do. In the case of the latter, government should commit to provide support for citizen monitoring efforts, and to heed the work of volunteer monitors. Finally, government needs to follow up on concerns about degraded environmental quality raised by local citizens through strong investigative and enforcement responses.

Introduction

In the last ten years or more, any discussion of the role and function of government has almost invariably made some reference to how changes in the international economy (usually termed globalization) and the rise of organized social movements have led to changes in the relationship between government and society, and government and private firms. Although the degree and influence of these changes vary according to geographic location, level of economic development, and political system, several broad recurring themes can be identified: increased emphasis on global economic competitiveness; increased number and influence of networks of local and regionally based organizations in government decisionmaking; and devolution, decentralization, and/or redefinition of government's role and responsibility in providing services (see Stren and Polèse, 2000). With respect to environmental issues in Canada, and specifically the most populated province in the country, Ontario, these trends have manifested themselves in several striking ways, particularly with respect to the monitoring of environmental conditions, such as water and air quality. Citizens and environmental

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organizations have witnessed and documented a steady withdrawal, absence, and shift in government's approach to monitoring and regulation (see Krajnc, 2000; Miller, 2002; OPSEU, 1997). In turn, a rise in voluntary approaches to environmental management has been witnessed (see Gibson, 1999; Harrison, 2001), as well as a burgeoning role for community-based environmental organizations and environmental nongovernment organizations (ENGOs) to provide qualitative and quantitative data on the state of the environment. (We make a distinction here between environmental organizations whose activities and membership are local, voluntary, and community based, and organizations that are more regional or national in scope and whose chief activities are advocacy, lobbying, and research dissemination. In the paper we are focusing on the first group.)

In this paper we take the well-documented shift in the government's approach to environmental management in Canada as a given. Although we remain critical of the absence of a more robust regulatory framework for environmental management, we examine these changes from the perspective of citizen-based environmental organizations in the province of Ontario, which have struggled to respond to these shifts. In this respect, our research is unique because it considers the continuing and often confusing changes in government environmental monitoring regimes from the perspective of voluntary organizations that are active participants in monitoring environmental quality. Furthermore, we openly acknowledge the internal administrative challenges governments face in environmental management, but contrast this with the challenge it presents to citizen-based groups. Hence, although we conclude by suggesting an ideal role for government in environmental management and an ideal relationship between government and citizen-based environmental organizations, we recognize the dilemmas in achieving this and in turn suggest immediate ways that government can develop a more robust and productive relationship with volunteer environmental organizations.

Our paper begins with a consideration of the notion of 'governance' as a conceptual framework for considering government – society relations in environmental management. In this first section, and based on environmental events in Ontario and the role of the Ontario Ministry of the Environment (MOE), we suggest three conditions needed for successful government – citizen partnerships in environmental management. Building on these conditions, in the second section we focus specifically on the experience of one citizen environmental organization, Citizens' Environment Watch (CEW), to examine critically the roles that government and citizens can and do play. Using this case, and with the help of other examples, we suggest the social and physical infrastructure—the dimensions of government – society relations—which could ensure more effective government – citizen partnerships.

Our findings are derived from several key sources: literature reviews; analysis of citizen-collected and Ontario provincial environmental monitoring data; and, first-hand experience with monitoring activities. The literature reviews considered three primary bodies of work: (1) Canadian and US citizen-based monitoring activities; (2) the notion and use of the concept of (environmental) governance; and (3) provincial government and nongovernment reports assessing environmental monitoring activities and results in Ontario. Other information was derived from the experience of one of the lead authors and founders of CEW, Dr Beth Savan, as well as her ongoing interactions with CEW staff (she currently serves on the Board of Directors as Past President and Chair).

Shifts in environmental governance: the relevance to voluntary organizations

How does government perceive and articulate its relationship with societal actors—citizens, citizen groups, private firms, and nonprofit organizations? The answer to this question is at the root of a remarkable growth in research on the changing relationship between government and society (see Dale, 2001; Ericson and Stehr, 2000; Parson, 2001).

Previously, many scholars had put forth the argument that the state was in fact in retreat because of an increasing number of international pressures, and that its ability to manage domestic affairs was in question (see Strange, 1996). However, today, although the specific and appropriate role and function of government are still widely debated, particularly in light of the ongoing importance of the notion of public – private partnerships and what these mean for the administration of services (Langford, 2002) and the legitimacy of government (Skogstad, 2003), governments may be more widely considered to be in a state of transformation, trying to adapt to numerous challenges and multiple centers of power (Wolfish and Smith, 2000). Today, analyses of government policy and decisionmaking tend to be much more cognizant of the actors participating in (or left out of) processes, the internal and external influences on government decisionmaking, and the influence these factors have on outcomes. In sum, there has been a shift from the study of *government* to a study of *governance*.

The concept of governance emphasizes the changing nature of government and the *process* side of governing; that is, governance is usually thought to point beyond government to include all of the collective actors who are brought into a system to address or manage a given issue (see Friedmann, 1998). Similarly, there is some "baseline agreement that governance refers to the development of governing styles in which boundaries between and within the public and private sectors have become blurred" (Stoker, 1998, page 17) with the particular combination, relative influence, and relationship between actors varying according to the specific purpose at hand (Friedmann, 1998, page vi). Ironically, despite the rise in the use of the concept of governance, there is still little consensus on a precise definition. Nonetheless, the recognition that many more groups, firms, and individuals (international, national, and local) intersect and compete in decisionmaking is consistent.[1]

The relevance and importance of governance to the subsector of environmental issues are strong. Dorcey and McDaniels, writing in a recently edited volume titled *Governing the Environment*, suggest that governance "is broadly conceived to be the interrelated set of processes within which individuals in varied roles make decisions about the environment" (2001, page 250). They go on to state, therefore, that *environmental governance* "is that subset of processes relating to decision-making with respect to the biophysical environment" (page 250).[2] The emphasis on the process associated with environmental management is timely. Protracted negotiation and debate over responses to environmental problems are now routine in Canada, with climate change being one of the most recent examples. Certainly, the slow yet gradual opening of environmental policy processes and the rise in and expectation of citizen involvement add to this complexity.[3] Nonetheless, despite some continued skepticism

[1] Despite the abundant use of the concept of governance in research on Western political systems, particularly in public administration and policy analysis, research in developing countries has seen a robust debate over the definition of the term, particularly in reference to cities and in debates over the meaning of 'good governance' (for further reading see Doornbos, 2001; McCarney, 2000; McCarney et al, 1995).

[2] For the most part, attention to the concept of 'environmental governance', particularly in Canada, has generally been implicit in debates over environmental policy. However, this has not been the case for the issue of 'global environmental governance' and 'global governance', subjects that international relations scholars have been writing about for many years (see: Bernstein, 2001; Conca and Lipschutz, 1993; Rosenau, 1995).

[3] Dorcey and McDaniel (2001, page 248) explain that there have been two major bursts of innovation in citizen involvement (CI) that are associated with the periods of heightened environmental concerns in the early 1970s and again in the early 1990s. They further state that "there is an underlying longer-term trend toward not only greater utilization of CI but potentially more fundamental transformation of the environmental governance system" (2001, page 248).

and frustration with citizen involvement (see Dorcey and McDaniels, 2001) few would advocate a return to decisionmaking processes which are largely closed negotiations:

> "Three decades of experience with CI [citizen involvement] in Canada and elsewhere have yielded one incontrovertible conclusion: It is not easy to achieve. Some would say CI is the worst part of environmental governance. Yet, most would agree that environmental governance without CI is not an alternative that will be considered seriously in the future ... the general trend towards increasing and diversifying CI in environmental governance ... will continue" (Dorcey and McDaniels, 2001, page 291).

One of the most striking challenges to result from the increased participation of citizens and other stakeholders in environmental decisionmaking is their influence on public administration, particularly as government – NGO partnerships proliferate (Howlett, 2001, pages 303 – 304) and the significance of environmental organizations in environmental monitoring and management increases (Savan et al, 2003). When the number and type of laws, policies, and programs directed at managing natural systems increase (Dale, 2001, page 137) and the reliance on partnerships with private firms and NGOs for environmental management also increases, the need for capable and responsive government organizational frameworks intensifies. To date, however, these kinds of framework have not been evident, with some observers arguing that organizational structures and administrative processes pertaining to the management of natural systems are inadequate and require significant structural change (Dale, 2001, pages 137, 145 – 160). If citizen-based environmental organizations are going to continue to make a significant contribution to government's (often limited) environmental monitoring activities they need to be able to design their activities in the context of government agencies' known direction and programs. Unfortunately, the outlook for developing advanced systems of environmental governance that are responsive to today's environmental problems will remain dim under present conditions if:

(1) the organization of government environmental agencies and the responsibility and action taken by them are unknown or invisible to those outside (and often within) the system;

(2) adequate resources are not provided to enable government agencies to develop rigorous monitoring and enforcement protocols; and, most importantly,

(3) the organization of the administrative system is unable to manage the social, economic, and legal complexities surrounding environmental issues and the diverse community parties with a stake in those issues.

These concerns are well illustrated when considering the internal organizational dilemmas that have confronted the Ontario MOE in recent years, particularly following the events in Walkerton, Ontario (see O'Connor, 2002a; 2002b) which are explored below.

Citizen-based environmental organizations: learning to respond to complexity and political change

In May 2000 the drinking water supply for the town of Walkerton, Ontario, a small town near the shores of Lake Huron with a population of approximately 5000, became contaminated with the bacterium *E. coli*. Because of several problems, the contamination of the water supply was not contained, resulting in illness for a majority of the town's population and seven deaths. On 12 June 2000, in the aftermath of these events, the Government of Ontario established an independent commission to inquire into the cause of the events including the effect, if any, of government policies, procedures, and practices and to make recommendations for the future safety of drinking water in Ontario. The findings of the inquiry were published in mid-2002 (O'Connor, 2002a; 2002b).

The events in Walkerton and the subsequent inquiry made it clear that the MOE had been under severe organizational strain for several years preceding Walkerton and that this is a continuing problem. Because of an increasingly complex range and number of environmental events demanding the attention of environmental field officers, tension between the elected government and civil servants, and the elimination of an enormous number of environmental staff positions in 1996 and 1997, the MOE's ability to respond to environmental emergencies and to address day-to-day operational requirements was being severely compromised (Merritt and Gore, 2001).

By 1997 the provincial Progressive Conservative Party (elected in 1995) had reduced the MOE's allocated staffing by 25% (Merritt and Gore, 2001, page 46).[4] Frontline environmental officers (generalists in environmental issues) were confronted with an enormous increase in the amount of activities they were responsible for while still being expected to carry out the same mandate. Consequently, many staff within the MOE were "confused about their specific role. It [was] not clear whether they should take a strong regulatory approach, or if they should encourage voluntary action and compliance and look for partnerships" (Merritt and Gore, 2001, page 120). Two key outcomes of this confusion were increased uncertainty about the frequency and thoroughness of activities of government agencies in environmental management, and citizen-based monitoring activities becoming, by default, much more important. In effect, by increasing the number of responsibilities of frontline staff, and by taking a less regulatory approach, the MOE was passing greater responsibility onto citizens (and private companies) for environmental management. When this arrangement is clearly articulated and well supported, greater citizen and private sector responsibility need not be a negative outcome of government reorganization.

The relationship between citizens and government in environmental management has always been symbiotic (P Muldoon, Director Canadian Environmental Law Association, personal conversation, 18 August 2003): citizens presume government will enforce or create laws to protect human and environmental health and will be proactive in doing so, and government agencies expect citizens to inform them of local environmental concerns because they cannot be everywhere at once, thus creating legal and institutional mechanisms for citizens to access and provide information. Problems in this relationship emerge, however, when government institutions lack the resources necessary to be proactive in regulatory and monitoring duties and/or implement remedial action at a pace or in a manner which is inconsistent with or unsatisfactory to citizen expectations. Hence, the government–citizen relationship in environmental management ebbs and flows depending on the degree to which the government is being proactive or reactive (Muldoon, personal conversation), and the degree to which citizens perceive government activity to be satisfactory. In this respect, it is fair to say that, in recent years in Ontario, government responsibility for environmental monitoring has

[4] Since the early 1990s the Ontario MOE had been experimenting with several different organizational frameworks with these efforts peaking in 1995 and 1998. In each of these years the MOE was striving to create a more integrated, holistic 'multimedia' structure in which issues such as air, land, and water would be jointly considered. The 25% reduction in staffing introduced by the Progressive Conservative Party in 1997, however, severely challenged the organizational changes that had been introduced in the early and mid-1990s to integrate all sectoral policy and planning activities in the Integrated Environmental Planning Division, and all environmental assessment and approval activities under the Environmental Assessments and Approvals Branch. By the end of the staff cuts, the MOE lost 752 staff positions (positions existing within the organization but not necessarily filled), with 279 of these coming from the Operations Division—the central body responsible for overseeing the delivery of programs, policies, management procedures, and activities (Merritt and Gore, 2001, page 46).

'ebbed' with monitoring activities in decline and the importance of citizen action increasing.

From this early discussion then, we can fairly suggest that the system of environmental governance in the Province of Ontario, that is, the character of the relations between government and societal actors which influence environmental decisionmaking and management has been weakened: there is uncertainty both within and outside the province's environmental agencies as to their specific responsibilities and objectives; the human and financial resources to support these activities are in short supply; and, hence, it would appear that the administrative system is unable to manage environmental issues in a manner which protects human health and the health of the biophysical environment.

Two brief examples are helpful here. In the first case, the events in Walkerton show the most extreme result of citizen expectations about environmental and public health being undermined by a culmination of events: a regulatory loophole created after the 1996 closure of government laboratories (see O'Connor, 2002a, chapter 10), which failed to require private laboratories to notify public authorities (environment or health) in the event of adverse test results; the failure of the local utility operator to inform authorities of adverse test results; the MOE failing to follow up on prior adverse test results and poor management, in some measure because of the burden of environmental officers always conducting 'reactive work' (O'Connor, 2002a, page 318); and an MOE drinking water facility inspection schedule that had grown to intervals of every four years. Together, these events led to a situation in which citizens were unaware of the problems inherent in the system protecting their water supply, in addition to ultimately carrying the burden of having to suffer to correct it. Indeed, it was the repeated calls of citizens to local hospitals following the emergence of an increasing number of cases of severe diarrhoea, along with an anonymous call (from a Public Utilities Commission employee) to the MOE Spills Action Centre reporting knowledge of concealed adverse water quality tests taken several days prior to the advent of widespread illness (amongst other critical events), which led to the eventual and late confirmation of the town's contaminated water supply (see O'Connor, 2002a, especially chapter 3).

The second example comes from the Rennie Street Landfill in Hamilton, Ontario. Here, it was citizen-initiated water quality monitoring activities of the Red Hill Creek—not government monitoring—which uncovered high levels of contaminants leaking from the landfill. The information discovered resulted in the City of Hamilton being fined $487 000 and ordered to address discharges from the landfill (MOE, 2000; Sharpe et al, 2000).

These examples illustrate that citizens and private firms can and do have important roles in environmental management. But when the nature of those roles is left ambiguous with neither government nor nongovernment actors understanding the full extent of their roles and responsibilities, the results can be tragic. In the case of Ontario, if the MOE does not clearly articulate the role that citizens play in documenting and informing them of environmental concerns, and citizens do not understand the important role they play (whether this is the result of cuts to MOE staff and activities or not) then the need for the partnership between citizens and citizen environment groups and the MOE is recognized by neither party. This observation is consistent with recent research suggesting that "little has actually been done to make Canadian public bureaucracies 'partnership ready'" and that public managers "do not have access to authorities, structures, or skills to initiate or manage complex collaborative relationships with private or third sector partners"(Langford, 2002, page 79).

To date, the Ontario government has not developed a clear coherent framework to engage citizen groups in symbiotic environmental monitoring activities. This is in part

a result of government being unable and/or unwilling to admit to be doing less than their expected mandate but, more practically, simply because the time available to construct such relationships is in short supply. Furthermore, in the absence of a clearly defined role for citizen–government partnerships in environmental management, citizen-based groups are left trying to predict how they should situate themselves with respect to government (in)action, and, hence, find themselves continually refining several aspects of their organizational approach and contribution to environmental management. Although these challenges presented to government and society may be considered to be the 'everyday' of political life in a pluralist political system, we argue that it need not be this disjointed. Drawing on the experience of one citizen-based environment group in Ontario, CEW, and more detailed consideration of the notion of 'citizen involvement', in the next section we consider how CEW has positioned itself with respect to the Ontario government and reflect on other North American state–society experiences to suggest improvements for state–society partnerships in environmental management in Ontario.

The case of Citizens' Environment Watch

Citizens' Environment Watch (CEW) is a Toronto-based, grassroots, nonprofit organization dedicated to environmental education and monitoring across Ontario. It was formed out of concern for the state of local environmental monitoring in 1996 following severe cutbacks to the MOE's environmental monitoring programs between 1995 and 1998. CEW brings together academic expertise, community groups, and government agencies in an attempt to safeguard and enhance Ontario's natural communities by helping citizens establish and apply the connections between science, policy, and action to improve environmental conditions. Specifically, CEW provides citizen and student groups with water and air quality monitoring protocols, some of which were developed in consultation with the Toronto and Region Conservation Authority (TRCA) and the federal government. Testing techniques, and quality-control and quality-assurance procedures are taught to groups of community college students, who then work with high school students in several areas of the province to test local environmental quality. This 'train the trainer' model is resulting in large numbers of students engaged in monitoring, with only a modest outlay of resources. The student-monitoring results are then presented to other students, CEW and government representatives, and are posted on the Internet, and the students are encouraged to research possible causes of high readings and to follow up on them in conjunction with local ENGOs.

By creating partnerships with high schools, as well as extensive participation in monitoring by volunteers, but leaving the investigation and enforcement function to the province, CEW engages both citizens and governments without placing an onus on citizens to perform what it deems are the responsibilities of government. CEW has formed partnerships with a wide array of citizen groups and with government agencies such as the Federal government's Ecological Monitoring and Assessment Network (EMAN) and the TRCA, which is responsible for local watershed management in the greater Toronto region. CEW has also established a partnership with MapReflections at the York University Centre for Applied Sustainability, which obtains data from the other two partners (CEW and TRCA) in return for providing an Internet-based interface that allows citizens to explore their local area as well as other local watersheds and assess their health.

As CEW has gained profile and credibility, these relationships with government have evolved. Originally, CEW operated independently, developing its own unique protocols for testing water chemistry, and shying away from partnerships with government. This changed, however, as problems with quality assurance for the chemical tests

became evident, and as CEW was approached by both the TRCA and EMAN with suggestions for biological monitoring techniques. These partnerships offered CEW access to a greater range of more reliable monitoring techniques for both water and air, and also provided a clear interest in follow-up (to the extent possible given their limited mandate) from CEW's local and national government partners, in cases of aberrant or alarming data. In such cases, the TRCA (or MOE) will conduct a full suite of rigorous testing to assess the area. Furthermore, harmonizing monitoring techniques with other environmental groups in the province does have the advantage that results are directly comparable for scientific analysis, and this helps to establish expectations of biological richness and diversity throughout the province in similar but geographically dispersed local habitats.

EMAN, an agency of the federal Department of the Environment, has continued to work extensively with CEW, by collaborating on the development of air quality monitoring protocols and by supporting CEW to survey other citizen monitoring groups across the country. The partnership between CEW and the TRCA is also promising. The arrangement, which used TRCA techniques, expertise, and outreach in exchange for CEW's access to the TRCA's volunteers and broad monitoring network, provides legitimacy and strength to both organizations. It allows all sides to benefit, with the citizens gaining knowledge, understanding, and empowerment, while the TRCA, still heavily pressed for funding because of government cutbacks, gains additional labour resources. With openly defined roles and expectations and some government infrastructure support, there is a clear understanding that has been established between two of the three parties: the governmental agency with monitoring expertise and the citizens. It still does not, however, address the issue of enforcement, which is the responsibility of the provincial MOE. TRCA and CEW will have to engage with the MOE to ensure adequate legal investigation and enforcement of polluters' responsibility for downstream or downwind degradation of environmental quality. In summary, CEW's partnerships with the local and federal government agencies allow citizen involvement in the management of local environmental conditions, while keeping government fully on the hook for regulatory activities. CEW's strong and productive links with both the TRCA and the federal government also ensure better harmonization with other monitoring groups. It has also made great strides in carrying out its monitoring in a highly efficient manner, using a sophisticated 'train the trainer' model, but further work is still needed to clarify its role relative to the MOE.

The Ontario MOE has recently approached CEW and expressed interest in engaging CEW to assist them in building a database on environmental quality. They are eager to use TRCA data as well (which are largely generated by ENGOs). To date, MOE has not been willing, however, to commit to making these data publicly available nor to taking action to prosecute or remediate in situations where environmental quality is poor. Data sharing with CEW will depend on resolution of these two issues. Past experience indicates that resolution will not come easily; in 2001, the MOE had data on air quality obtained from industry self-monitoring which was available within the MOE but not to the public. Environmental Defense Canada, a local ENGO, made a Freedom of Information request and obtained the data but MOE lawyers told the ENGO that these data could not be published. Following extensive negotiations, the data were made publicly available on a website (www.airwatch.ca), with the inclusion of an explanatory caveat on interpretation of the data (M McGrath, former Activity Director of Environmental Defence Canada, personal communication, 2003, Toronto). Nevertheless, a dialogue has been entered into with the MOE, beginning the process of establishing a key element of a successful monitoring program—follow-up and enforcement.

It is noteworthy that, even if a new provincial government took power in upcoming elections and reinvested staff positions and monitoring and enforcement resources, CEW would again need to redefine their role in this new management environment. A full discussion of CEW's history and monitoring efforts can be found in Savan et al (2003) and Sharpe et al (2000). Reflecting on the three points outlined at the end of the section above on shifts in environmental governance, it is clear that CEW's relationships with the TRCA and the federal government involve a clear understanding of the roles of each agency, with both of these government agencies articulating coherent organizational structure and spheres of responsibility, although each agency is relatively poorly funded. Although CEW has even more meager resources, it does have enough to engage in a substantial monitoring program, although its future is fragile. What is conspicuously lacking, however, is a similar organizational transparency and an open and clear relationship with the provincial MOE, which has the primary responsibility for investigation and enforcement.

Partnership strategies: theory and practice

There is a very large body of research that has been conducted on citizen involvement and participation in environmental concerns. Recent examples of citizens responding to local environmental water quality concerns include Akland et al (1997), Berry et al (1997), Moog and Chovanec (2000), and Sparrow et al (2000), but one may delve much further back to trace the history of citizen participation in environmental monitoring. In her seminal paper, Arnstein (1969) provided a framework of citizen participation that essentially described citizen empowerment. This "ladder of citizen participation", describes a range of participation from nonparticipation through tokenism all the way to citizen power that allows citizens to "induce significant social reform ... [and] share in the benefits" (Arnstein, 1969, page 216). This 'ladder', or range of interaction between government monitoring and citizen involvement, has considerable spatial and temporal variability. Typically, government interaction with community groups consists of environmental impact assessments and public consultations that may be construed as tokenism (Haughton, 1999; Sinclair and Diduck, 2001). Sometimes partnerships between government and other agencies are established to achieve specific contributions from nongovernment agencies, such as funding, service delivery, or advice (Mitchell, 2002). There exists a large body of literature that explores methods behind public participation and how to avoid pitfalls (for further information, see Chess, 2000).

A range of roles is possible for volunteer monitors, and those depend largely on their mission. For example, environmental monitoring as a purely educational activity can be carried out entirely independent of government, because the results of the monitoring would be learning and not further remedial action. If further investigation and enforcement are anticipated, however, some relationship with the level of government responsible for prosecution of environmental polluters or habitat restoration is likely required to foster effective remediation. In this case, where environmental monitoring forms part of a broader stewardship mandate for the citizens involved, the nature of the group's ties to government warrant very careful attention. At one extreme, citizens can become the instruments of a government agency which does not have the resources to monitor itself, and the citizens could lose any control over the interpretation and application of the information they collect. Other models provide for more equal distribution of both effort and control.

Table 1 (see over) describes a range of government – citizen monitoring group relationships, with respect to the role of each in key activities. The types of relationship are loosely based on the categories described in Arnstein's (1969) paper. As in her typology, our categories are distinguished by the varying degrees of citizen power characterizing

each relationship. The extent of citizen power is defined according to specific criteria related to the environmental monitoring process. In particular, the degree to which citizens determine what is monitored and how indicates how much citizens can modify the monitoring protocol to suit their own needs, rather than becoming an instrument for government to carry out its own monitoring program with citizen labor. Citizen control of analysis, interpretation, and distribution of the data permits the identification of environmental 'hot spots' without manipulation or delays in releasing potentially controversial information. Follow-up, and specifically the decision about prosecutions of polluters, again is likely to be more rigorous if a citizens watchdog group is involved (Sharpe et al, 2000). These relationships can be defined by asking who controls decisions about the monitoring protocol, analysis, interpretation, and distribution of results and follow-up activities. The greater the exclusive involvement of citizens in these choices, the greater the degree of citizen control. Conversely, the more that government controls these decisions using citizens merely as a monitoring tool, the more that citizens become co-opted and lose their independence. In between these extremes there are different kinds of collaboration or partnership, in which varying components of the monitoring and follow-up process are shared. The relationships of control, partnership, and cooperation correspond roughly to Arnstein's (1969) categories of control, delegated power, and consultation, with collaboration falling closer to partnership.

Table 1. Types of government – citizen monitoring group relationships.

Relationship (based on extent of citizen control)	Control	Partnership	Collaboration	Co-optation
Who determines monitoring protocol	citizens	shared	government	government
Who determines data analysis, interpretation, and distribution	citizens	citizens	citizens	government
Who determines follow-up	citizens	citizens, then government	shared	government

Prior to 1990, Ontario governance of environmental quality monitoring fell into the co-optation model whereby government played the preeminent role, with citizens monitoring only occasionally, and sharing results with government which often carried out analysis and interpretation and follow-up when necessary. Government maintained an excellent network of monitoring stations that allowed it to understand the background environmental quality in most areas of the province. Following the almost complete withdrawal of the provincial government from environmental monitoring in Ontario (Miller, 2002), some citizens groups have taken the initiative in monitoring and enforcement, like in the Red Hill Creek case in Hamilton (Sharpe et al, 2000), falling into the control model of community-based monitoring. More often, however, citizen groups have embarked on alliances with government (although usually not the level of government responsible for enforcement) to establish monitoring partnerships like CEW's or collaborative networks of citizen-based monitoring, as in the case of the US Environmental Protection Agency (EPA), which combine the use of government resources and expertise and authority with citizen stewardship of local ecosystems.

The EPA actively encourages volunteer monitoring using a number of approaches. It sponsors national conferences for volunteer organizers and agency representatives, prepares and manages a listserv for volunteer monitoring program coordinates, publishes a national newsletter for volunteer monitors as well as a directory of volunteer monitoring

programs, provides technical assistance related to quality control, manages grants for programs, and provides information exchange services for volunteers (USEPA, 2002). In this paper we highlight the tension between government responsibility for maintaining minimal environmental quality (including knowledge of background environmental conditions) and withdrawal from this field by government, with citizens keen to ensure continuous records permitting knowledgeable stewardship without legitimizing government withdrawal. This has led to uneasy, unacknowledged partnerships with enforcement agencies that assume that citizens have a role in alerting the civil service to environmental problems but do not provide the type of physical and social infrastructure (that is, mechanisms for sharing data and channels for clear communication) needed to ensure that a clear relationship between citizens and the government enforcement agency actually exists.

Many factors influence the relationship between government and volunteer environmental monitoring groups. The source and purpose of resources and funds provided to groups are critical. ENGOs will be able to maintain independent control of their programs much more effectively if they have ongoing core funding which is not program dependent. For example, the mandate of bringing together community members and providing them with an active role places CEW near the top of Arnstein's (1969) ladder and in the partnership category of table 1. CEW was, however, denied one large grant for monitoring surface water by an arm's-length provincial government foundation because the foundation wanted to avoid any attention being drawn to water quality issues during the Walkerton Public Inquiry. Partly as a result of this rebuff, CEW accelerated its efforts to secure funding for air quality monitoring initiatives. Such experiences do not promote easy partnerships with government nor do they encourage consistent approaches.

The line between responsibility for monitoring, on the one hand, and investigation and enforcement of regulations when pollution emission problems are detected, on the other hand, is also a fine one. The Ontario government has historically taken full responsibility for investigation and enforcement and only relatively recently reduced its involvement in direct monitoring of environmental quality (Krajnc, 2000; Miller, 2002). As citizens take on a larger role in monitoring, their contribution to investigation and enforcement becomes a real question. One excellent example, briefly mentioned above, is the citizens group in Hamilton, Ontario, which carried out water quality monitoring on the local Red Hill Creek and found alarming levels of contaminants, and used their data to press charges against the city government for not containing landfill runoff. The city pled guilty, settled the case, and is remediating the site (Sharpe et al, 2000). Should investigation and enforcement remain the exclusive domain of government, or should the stewardship role of volunteer monitors extend into the role of legal action? Questions such as these again raise issues about the future functions of citizen environment groups. In particular, concerns develop over whether temporary citizen group activities that fill government loopholes will in time become essential, with disparate groups becoming chief agents in environmental monitoring activities. In this case, the greatest concerns may be the inconsistency that could evolve and become institutionalized, whereby areas with strong citizen monitoring groups receive regular attention, while regions without could have severe but unnoticed pollution problems.

Earlier in this paper, we broached three questions which determine the effectiveness of government – citizen partnerships:

(1) Is the organization of government environmental agencies and the responsibility and action taken by them known and visible to those outside (and within) the system?

(2) Are adequate resources provided to enable government agencies to develop rigorous monitoring and enforcement protocols?

(3) Is the organization of the administrative system able to manage the social, economic, and legal complexities surrounding environmental issues and the diverse community parties with a stake in those issues?

In table 2 we assess the cases described above with respect to these three questions and expand upon these questions by proposing four criteria by which the *outcomes* of environmental governance may be evaluated. As the evolution and application of the concept of 'environmental governance' mature, so too do the dimensions by which it is evaluated; hence these criteria are an initial attempt to evaluate the infrastructure needed to construct a more robust framework for environmental governance. The four criteria we suggest, and which we hope future authors will build on, are

(1) Government transparency—were government decisions and the information used in those decisions easily available to citizens?

(2) Adequate resources—did government have sufficient resources (technical, financial, human) to undertake its responsibilities and are citizens groups similarly supported so that they may complement government functions?

(3) Coherent organizational structure and articulation of responsibility—was the government organizational structure clear both to citizens and to other government agencies and could responsibility for specific activities be clearly identified?

(4) Commitment to follow-up and enforcement activities—is there a identifiable commitment on the part of government to follow-up and enforcement activities vis-à-vis programs, resources, and legislation which would indicate a proactive rather reactive environmental management framework?

Table 2 extends table 1, by examining not only the respective roles of each party but by analyzing the infrastructure (the social and physical attributes) underpinning these partnerships. Our three primary questions point out that a lack of infrastructure inhibits effective government–citizen partnerships and creates a backdrop for environmental catastrophes, where early warning signals are ignored and government responses are inadequate. In such a context, even the citizen–government partnership characterized by the strongest citizen role (citizen control for table 1) would have limited impact. Improving infrastructure and, hence, the governing relationship between government and citizens exhibited in the examples moving from left to right on table 2, permits citizen–government partnerships to be more and more effective.

Table 2. Evaluating environmental governance—five selected cases.

	Walkerton	Hamilton	CEW–MOE	CEW–TRCA and EMAN	EPA
Government transparency	no	no	no	yes	yes
Adequate resources					
within government	no	no	no	no	yes
for citizens group	no	no	no	no	no
Coherent organizational structure and articulation of responsibility	no	no	no	yes	yes
Commitment to follow-up and enforcement activities	no	yes	no	no	yes

Note. CEW—Citizens' Environment Watch, EMAN—Ecological Monitoring and Assessment Network, EPA–US Environmental Protection Agency, TRCA—Toronto and Region Conservation Authority.

Discussion, conclusions, and recommendations

Although a much more clear and reciprocal relationship with government would be better than the relationships described above with the MOE, what sort of relationship would be ideal? Partnerships with citizen-based groups could result in more responsibility being devolved onto citizens, and provide government with the opportunity to withdraw from their responsibilities. How can these partnerships be constructed to limit the ability of government to shirk its responsibilities, while building a more informed citizenry that is able to provide opportunities and resources for the general public while observing elements of the local environment that are not seen by government agencies?

The challenge that arises is seeking out approaches to public engagement and government–citizen partnerships that build on the strengths and expertise of both government and citizens. This may, as some have suggested (Dale, 2001), call on government to completely revisit its approach to organizing its environmental management functions. Unless government is able to raise considerable new resources, it will not return to the ideal situation where it took full responsibility for monitoring and maintenance of thorough background data on environmental quality. It will, otherwise, have to promote and openly acknowledge the important role of citizens and citizen-based environment groups in environmental management, while reinforcing the need for government to take responsibility for following up on citizen concerns through its investigations and enforcement functions. It is easy to critique government for shirking and withdrawing support for essential environmental monitoring activities. However, we would be remiss not to suggest that consumers and business also need to take a more active role in self-monitoring and assessment of their own activities. Therefore, programs, policies, and processes must acknowledge interdependence, expand transparency, and emphasize the accountability of all parties for their own actions and their impacts on the environment. Clear and publicly available agreements should be developed which outline the respective responsibilities of citizens groups and government. This agreement should articulate the monitoring efforts citizens agree to undertake, and the government's commitment to make these data publicly available and to take follow-up action on citizen-identified 'hot spots'. This begs important questions of autonomy and control over what is monitored, when and where, and who funds this activity (Griffin, 1999). It is critical to maintain citizen independence and control over their own activities, although the lack of general frameworks, like the one provided to CEW by the TRCA, results in fragmentation of datasets using different protocols and greater difficulty in securing funding for citizen monitors. In the absence of a thorough government monitoring program, support for citizen efforts like that provided by the EPA enhances citizens' ability to engage in effective environmental stewardship and clarifies and reinforces the partnership between government and citizens.

We recommend a few critical characteristics of a reconstructed relationship for government and citizen monitors during this time of resource scarcity. Government must acknowledge its inability to carry out the full range of monitoring activities and actively seek explicit partnerships with groups that are able to monitor local environment quality. We support the type of partnership arrangement outlined in table 2 and described by Arnstein (1969) as delegated power. Citizen-friendly monitoring protocols should be made available by government, for the use of citizens if they so choose. The results of these monitoring exercises should be publicly available, free of charge (currently Ontario government monitoring results are available only for a fee). Citizens, trained by local environmental monitoring groups such as CEW, will then be able to independently follow up on aberrant results. Regular communications with local monitoring initiatives would allow for a two-way flow of information while keeping government active and responsible as the enforcer of laws and regulations should

inspections be required to build a case. It is important that governments allow the public to know of their dependence on citizens to alert them to potential problems. Once these roles and activities have been explicitly acknowledged and made public, both citizen involvement and government accountability will be encouraged.

CEW's experience clearly demonstrates that an effective partnership requires essential government infrastructure, and the transparency, resources, and clarity regarding roles and responsibilities that permit constructive collaboration. This remodeled relationship between government and citizen monitors recognizes the limits to government capacity and reserves government resources for its essential responsibility. It welcomes the response of citizen monitors to this new situation, by supporting and acting on their increasing role as community environmental watchdogs. This partnership between government and community groups accepts a new vision of environmental governance in which government works in close collaboration with active partners in other levels of government and the private sector, and with the key local citizens groups which have a large stake in the environmental health of their community.

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