

**Thinking Globally, Acting Locally:
Local Actions against Global Climate
Change in the US, Canada and Australia***

Ion Bogdan Vasi

Cornell University

Email: *ibv2@cornell.edu*

* This is the first draft of the paper which will be presented at the Society for Comparative Research graduate student workshop at UC San Diego in May 2004. Comments are greatly appreciated!

Abstract

While many diffusion studies recognize that the institutional environment of organizations has an important role for legitimating innovative practices, most of them are unable to specify how this environment shapes the diffusion of organizational practices. This research explores an approach to comparing the effect of different institutional environments for the diffusion of innovative practices. I argue that the diffusion of organizational practices is influenced by institutionalization processes which operate in concentric institutional spheres. The study shows that organizational practices diffuse rapidly when they are institutionalized in multiple institutional spheres and slowly when they are institutionalized in a single institutional sphere. I use event history and qualitative analyses to study the diffusion of an environmental program called Cities for Climate Protection (CCP) among local governments in the US, Canada and Australia.

One of the main reasons for studying the institutional environments of organizations is the belief that they influence the diffusion of organizational practices. Although many diffusion studies recognize that the institutional environment of organizations has an important role for legitimating innovative practices, few are able to specify how the institutional environment shapes the diffusion of organizational practices. Since most diffusion studies lack a larger comparative lens and analyze only the variability in the timing of adoption of a practice across a single community or a “relationally and culturally connected population”, the insight developed from these studies is difficult to be integrated (Strang and Soule 1998: 279).

This research explores an approach to comparing the effect of different institutional environments for the diffusion of innovative organizational practices. As a starting point I use the studies on the diffusion of organizational practices (Hedstrom 1994; Myers 1997, 2000; Davis and Greve 1997; Strang and Meyer 1993; Chaves, 1996; Soule 1997; Soule and Zylan 1997; Hedstrom, Sandell, and Stern 2000; Van den Bulte and Lilien 2001) and neo-institutional research on organizational change (Meyer and Rowan 1977; DiMaggio and Powell 1983; Fligstein 1991; Scott and Meyer 1994; Dobbin and Sutton 1998; Hoffman and Ventresca 2002). Building on these literatures, I argue that the diffusion of organizational practices is influenced by institutionalization processes which operate in four concentric institutional spheres. More specifically, I show that organizational practices diffuse rapidly when they are institutionalized in multiple institutional spheres and slowly when they are institutionalized in a single institutional sphere.

Empirically, I study the diffusion of an environmental program called Cities for Climate Protection (CCP) among local governments in the US, Canada and Australia. Although local actions against global climate change started in 1991 with the *Urban CO₂ Reduction Project*, a program designed to develop comprehensive local strategies for reducing greenhouse gas emissions, the CCP program was formally initiated by the International Council of Local Environmental Initiatives in 1993.¹ Over 500 local governments located mostly in the North American, Asia-Pacific, and European regions have adopted the CCP program during the period 1991-2002. Yet, the CCP program diffused heterogeneously in different countries: as Figure 1 shows, the program diffused relatively slow in the US, somewhat fast in Canada, and fast in Australia.

[Figure 1 about here]

These differences in the rate of diffusion of the CCP program are puzzling, especially considering the many similarities between these countries. First, the public's awareness about the global climate change problem is equally low in Australia, Canada and the U.S. Thus, only small minorities in each of these countries are able to identify the human causes of global climate change, and few people consider it to be one of the most important environmental problems facing their country or the world.² Second, Australia,

¹ Local governments which participate in the CCP program typically pass a resolution reflecting their intention to address the problem of global climate change and commit themselves to reduce their emissions of greenhouse gases. The CCP program has five milestones: conducting a GHG emissions analysis, establishing an emissions reductions target, developing an action plan, implementing the action plan, and monitoring progress (See Vasi 2004).

² Opinion polls show that only about 11% of Americans, 12% of Australians and 14% of Canadians can correctly identify the main cause of the greenhouse effect (Brechin 2003). Moreover, despite the recent increase in awareness about global warming, this problem is perceived as less serious than other environmental problems. For example, a 2003 poll showed that fewer than 1 in 10 Australians

Canada and the U.S. are by far the largest producers of greenhouse gases per capita in the world. For instance, in 1999 these countries produced between 2 and 5 times more greenhouse gases per capita than most Western European countries.³ Third, Australia, Canada and the U.S. were among the few industrialized countries in the world which did not ratify the international agreement for limiting emissions of greenhouse gases known as the Kyoto Protocol until the end of 2002.⁴ Finally, the environmental movement is relatively equally developed in the US, Canada and Australia, and the three countries have similar numbers of environmental NGOs which are involved in the Climate Action Coalition.⁵

Why did the CCP program diffuse faster in Australia than in the US and Canada despite the apparent similarities between these countries? More generally, which factors of the institutional environment account for the cross-national variations in the diffusion of innovative organizational practices? To address these questions, I begin by reviewing the literature on the diffusion of innovations and the neo-institutional research on organizational change; then, I use event history analysis and qualitative data to examine how different institutionalization processes shape the diffusion of the CCP program among local governments in the US, Canada and Australia.

spontaneously mentioned climate change amongst their top three important environmental issues (Brunton 2003), a 1997 poll showed that only 1% of Canadians surveyed named global warming as the most important environmental issue facing Canada (Alberts 1999), and a 2000 opinion poll showed that global warming is the fifth in a list of Americans' environmental concerns (Gallup 2001).

³ According to a recent study published by The Australia Institute, the highest values of tons of CO₂ emitted per capita in 1999 were recorded in Australia (27.9), Canada (22.2) and the US (20.7). Western European countries emitted significantly fewer greenhouse gases: for instance, the Germany emitted 11.6, France emitted 8.2, and Sweden emitted 5.2 tons of CO₂ per capita (Turton and Hamilton 2002).

⁴ The Australian and U.S. governments did not ratify the Kyoto Protocol to this day. Canada, however, adopted a motion to ratify this agreement on December 10, 2002.

⁵ The Climate Action Coalition (CAN) is an umbrella organization created in 1989 to actively monitor and seek to influence the climate negotiations as well as climate-related policies and measures at the national and international levels. In 2003, CAN had 54 members in the US, 31 members in Canada, and 30 members in Australia.

INSTITUTIONAL ENVIRONMENTS AND THE DIFFUSION OF ORGANIZATIONAL PRACTICES

Research on the diffusion of innovations has generally centered on two mechanisms: social contagion and marketing efforts. Social contagion depends on potential adopters' exposure to previous adopters' attitudes and behaviors concerning an innovation. While some models of diffusion suggest that diffusion is rapid when the rate of direct interaction between prior and potential adopters is high (Hedstrom 1994; Myers 1997, 2000; Davis and Greve 1997), other models suggest that diffusion is rapid when potential adopters define themselves as similar to transmitters (McAdam and Rucht 1993; Strang and Meyer 1993; Chaves, 1996; Soule 1997; Soule and Zylan 1997). Marketing efforts depend on potential adopters' exposure to the persuasive influence exercised by change agents and idea entrepreneurs (Hedstrom, Sandell, and Stern 2000; Van den Bulte and Lilien 2001; Lounsbury 2001; Abrahamson and Fairchild 2001). Most diffusion studies, however, examine the adoption of practices across a single community of individuals or organizations and fail to compare causal mechanisms across settings (Strang and Soule 1998). Consequently, more work is required to specify how institutional environments influence the social contagion and marketing efforts mechanisms.

To contribute to a systematic understanding of the way in which institutional environments shape the spread of innovations, I begin by examining the neo-institutional work on organizational change. Neo-institutional research has shown that organizational change is influenced by the rules and structures that are built into the wider environment and has analyzed how organizations operate in various institutional spheres.⁶ The most

⁶ Institutions are defined as “symbolic and behavioral systems containing representational, constitutive, and normative rules together with regulatory mechanisms that define a common meaning system and give rise

basic institutional sphere is that of the organization itself, since every organization has a certain organizational structure which simultaneously enables and constraints action (Fligstein 1991). For instance, Tolbert and Zucker (1983) have shown that the early adoption of civil service reforms is predicted by city characteristics such as the size of immigrant population, size of city, the socioeconomic composition, and the existence of political reform movements. Another institutional sphere is made of the organizational field, which is a diverse set of organizations sharing a common locality.⁷ Some of these studies emphasize the relatively homogenous institutional pressures exercised by organizational fields (Meyer and Rowan 1977; DiMaggio and Powell 1983; Scott and Meyer 1994), while others underline the competing field level dynamics and the potentially conflicting institutional processes taking place in overlapping and nested organizational fields (Hoffman and Ventresca 2002).

Still another institutional sphere is that of the state, since the state can provide opportunities for organizational change and “set the rules of the game for any given organizational field, even though it is not a direct participant in the field” (Fligstein 1991: 314). Thus, Dobbin and Sutton (1998) have shown that although the U.S. state was weak and fragmented, by issuing ambiguous mandates to organizations, changing rules in response to protracted political negotiations, and enforcing its rules in an indecisive way the state played a crucial role for the spread of human resources management divisions

to distinctive actors and action routines” (Scott 1994: 68). Similarly, institutional spheres are defined as “arenas where rules are created, meaningful action occurs, power relations are formed, and concrete forms of social organization are set in place” (Fligstein 1991: 312).

⁷ Some scholars argue that organizational fields have boundaries which are defined in functional rather than geographical terms, such that “nonlocal as well as local connections, vertical as well as horizontal ties, and cultural and political influences as well as technical exchanges are included within the organizational field of forces viewed as relevant” (Scott 1991: 174). According to Scott, an organizational field is “a community of organizations that partake of a common meaning system and whose participants interact more frequently and fatefully with one another than with actors outside the field” (Scott 1995: 56).

among various organizations. Finally, the supra-national institutional sphere of the world society can influence organizational change since worldwide models shape “the structures and policies of nation states and other national and local actors in virtually all of the domains of rationalized social life” (Meyer, Boli, Thomas, Ramirez 1997: 145). For instance, recent studies show that national activities to protect the environment have spread top-down from the world society due to the global institutionalization of the principle that nation-states bear responsibility for environmental protection (Frank, Hironaka, Schofer 2000).

Synthesizing these neo-institutional perspectives, I argue that organizational change is simultaneously shaped by institutionalization processes which operate in four concentric institutional spheres: intrinsic organizational structures, local organizational fields, state environment, and world-society environment. I define the institutionalization of innovative practices as the process whereby these practices’ values, norms, and expectations become taken for granted as appropriate and necessary features of the organization. Consequently, organizational practices have a low level of institutionalization if they are based on norms, values, and expectations which are seen as inappropriate and unnecessary features of the organization, and a high level of institutionalization if the norms, values and expectations on which they are based are taken for granted as both appropriate and necessary features of the organization. Since the level of institutionalization of an innovative practice is shaped by factors which operate in concentric institutional spheres, and since the adoption of innovative organizational practices and programs is shaped by their level of institutionalization, I conclude that the diffusion of innovative practices is influenced by institutionalization processes which act

simultaneously at the levels of intrinsic organizational structures, local organizational fields, state environment, and world-society environment.

Hypotheses

One intrinsic organizational structure which has the potential to influence local governments' adoption of the CCP program is the characteristic of the community in which a local government is located. Based on previous research, I expect that local governments in communities that are large, have a high level of education, and have many environmental NGOs are more likely to take actions against global climate change than local governments in communities that are small, have a low level of education, and few environmental NGOs (Vasi 2004).

HYPOTHESIS 1: The CCP program should diffuse at a faster rate to those local governments in communities that are large, highly educated, and have many environmental NGOs.

Another intrinsic organizational characteristic which can influence the diffusion of the CCP program is the municipalities' involvement in local environmental activities. I predict that the CCP program is likely to spread to local governments that are already involved in environmental activities which are congruent with the CCP program, since these activities act as receptor sites or "social structures with the capacity to receive, decode, and transmit information from the outside to local actors" (Frank, Hironaka and Schofer 2000: 103).

HYPOTHESIS 2: *The CCP program should diffuse at a faster rate to those local governments involved in compatible environmental activities.*

The diffusion of the CCP program can be also shaped by the proximity between previous and potential adopters in the local field institutional sphere. Based on previous studies, I predict that the CCP program is likely to spread faster to local governments that are in the same geographic and administrative region as previous adopters (Vasi 2004). I argue that local governments which are both spatially and administratively proximate to previous adopters are likely to be influenced by them due to social contagion through relational and non-relational diffusion channels and due to the marketing efforts of change agents who target actors located in a proximate region.

HYPOTHESIS 3: *The CCP program should diffuse at a faster rate to those local governments that are spatially and administratively proximate to previous adopters.*

Finally, the CCP program is likely to spread through national and international change agencies inter-organizational linkages with local governments. In the state institutional sphere the diffusion of the CCP program is likely to be influenced by the marketing efforts of national change agencies, while in the supra-national institutional sphere the diffusion of the CCP program is likely to be shaped by the marketing efforts of international change agencies. This statement is based on previous studies which show

that various national actors such as governments, foundations, universities or business associations can build an infrastructure for diffusion and institutionalize an innovative practice (Cole 1985; 1989), and that the world society influences the spread of national and local practices (Meyer, Boli, Thomas, and Ramirez 1997; Frank, Hironaka and Schofer 2000).

HYPOTHESIS 4-A: The CCP program should diffuse at a faster rate to those local governments closely linked to national change agencies.

HYPOTHESIS 4-B: The CCP program should diffuse at a faster rate to those local governments closely linked to international change agencies.

THE ADOPTION OF THE CCP PROGRAM IN THE US, CANADA AND AUSTRALIA: EVENT HISTORY AND QUALITATIVE ANALYSES

To measure the influence of various factors on the CCP program's adoption hazard rate, I use event history analysis, a statistical technique which models events occurring at specific points in time. The Australian, Canadian, and US samples include all cities that had over 25,000 people in 1991. Cities with a population below 25,000 were not included in the sample because of the difficulties of collecting data about small cities.

Additionally, I use qualitative analysis to examine the interviews conducted with a number of change agents from the US, Canada, and Australia who had extensive experience with the CCP program.

Data

Dependent variable - The dependent variable is the hazard of adoption of the CCP program. Information on the dates when cities adopted the CCP program was collected from a variety of sources: city clerks, city staff members who have been involved in the program and ICLEI officials from Australia, Canada and the US. The date of adoption was recorded in years to avoid problems caused by uncertainty in the recollection of information.

Intrinsic organizational properties – In the case of the US sample, the variable organizational size was recorded using the 1991 United States Census Bureau data on city population. The variable level of education was recorded using the 1991 USCB data on the proportion of people with a BA degree in cities. The variable environmental orientation was measured using the Microsoft Network Yellow Pages which allows the identification of all non-profit organizations dedicated to protecting the environment located in a particular city. In the case of the Canadian sample, the variables organizational size and level of education were recorded using the 1996 Statistics Canada Community Profiles, while the variable environmental orientation was measured using Yellow Pages Canada. Finally, for the Australian sample organizational size and level of education were recorded using the 1996 Australian Bureau of Statistics Basic Community Profiles and environmental orientation was measured using Yellow Pages Australia.

Environmental activities – For the US sample, the variables environmental activities were coded using data from the Clean Cities Coalition (CCC), and Rebuild America (ReAm). For the Canadian sample the variable environmental activities was coded using data from Canadian Green Communities, while for the Australian sample

this variable was coded using data from the Australian National Environmental Awards for Local Governments.⁸ These variables were coded as dichotomous variables, having the value 1 if the city was involved in environmental activities previous to the adoption of the CCP program, and the value 0 if the city was not involved in these activities. The tables in Annex 1 present descriptive statistics for the populations of US, Canadian and Australian cities “at risk”.

Spatial and administrative proximity – In the US, the variable spatial and administrative proximity to a previous adopter was recorded using United States Census Bureau data on the distribution of cities within counties. In Canada, the variable spatial and administrative proximity to a previous adopter was recorded using Yahoo Canada Directory data on the distribution of cities within counties and districts. In Australia, the variable spatial and administrative proximity to a previous adopter was recorded using information from The Australian Local Government Association on Regional Organization of Councils.⁹ These data files were split using the Multiplicative Heterogeneous Diffusion Models (mhdiff) SAS routine developed by David Strang (MHDIFF User Documentation, 1995).

Change agency ties – The formal linkages between the International Council of Local Environmental Initiatives change agency and local governments were coded using

⁸ Clean Cities Coalition and Rebuild America are environmental programs sponsored by the US Department of Energy which promote alternative fuels for transportation and energy efficient buildings. The Canadian Green Communities is an association of non-profit community enterprises which are “in the business of selling environmental action”; it includes partners from municipal governments, financial institutions, community organizations, business organizations, and government agencies. The Australian National Environmental Awards for Local Governments are awards offered by the Australian Government to local governments involved in environmental protection activities.

⁹ Unlike the US and Canada, Australia does not have counties as regional entities of local governments. The closest correspondent to counties are Regional Organizations of Councils (ROCs), or partnerships between groups of local governments of diverse size and structure which join voluntarily, recognize a range of common issues and interests, demonstrate their commitment in the form of financial contributions, and nominate representatives to the ROC’s executive board.

data about membership in ICLEI from the Berkeley, Toronto, and Canberra headquarters. This variable was coded as a dichotomous variable, with the value 1 if cities were ICLEI members previously to the adoption of the CCP program, and the value 0 if cities were not ICLEI members. In Canada the CCP program was marketed not only by the ICLEI change agency but also by the Federation of Canadian Municipalities (FCM); the formal linkages between FCM and local governments was coded using data about membership in this organization from FCM's headquarters in Ottawa.¹⁰ In Australia the CCP program was marketed through a partnership between ICLEI and the Australian Greenhouse Office (AGO), as well as through a partnership between ICLEI and the Australian Local Government Environment Network or ENVIRONS; however, only ICLEI Australia and ENVIRONS have information about formal linkages with local governments.¹¹

The model

I employ a version of the multiplicative heterogeneous diffusion model developed by Strang and Tuma (1993). This model can measure the fact that an adoption by one city may affect other cities differently depending on their intrinsic properties as well as on the proximity between a previous adopter and a potential adopter. The hazard rate for the multiplicative model is:

¹⁰ Although the CCP program was initially marketed from the ICLEI international headquarters in Toronto, ICLEI collaborated informally with the Federation of Canadian Municipalities, a national association of local governments which represents the interests of Canadian municipalities on policy and program matters within federal jurisdiction. Starting in 1998, the collaboration between ICLEI and FCM became formal and the Cities for Climate Protection program changed its name to Partners for Climate Protection (PCP) program.

¹¹ AGO was established in 1998 and is a government agency dedicated to cutting greenhouse gas emissions at multiple levels: national and local governments, community businesses and national industries. ENVIRONS Australia was created in 1989 and is an association of local governments which are involved in a variety of sustainability practices: biodiversity conservation, natural resource management, green energy and transportation, or sustainable land use.

$$h_n(t) = \exp(\alpha X_n + \sum_{s \in S_n(t)} \delta Z_{ns}), s \in S_n(t)$$

Where $h_n(t)$ is the hazard of an event of interest (adoption) for case n at time t , the vector X_n is a covariate describing the intrinsic propensity of n to adopt, $S_n(t)$ is the set of prior adopters who influence n , and the vector Z_{ns} is a covariate describing the proximity of n and s or the pairwise-specific influence of s on n (Strang and Tuma 1993). The interpretation for this model is straightforward. First, an organization (city) has an intrinsic propensity to adopt a program (CCP) resulting from its individual characteristics. Cities with certain organizational structures, activities, and ties to national and supra-national change agencies are more likely to adopt the CCP program than those without these propensities. Second, when a city adopts the CCP program, the extent to which it influences the adoption behavior of other cities is dependent on the spatial and administrative proximity between them. The diffusion models employed herein were estimated using the method of maximum likelihood (Strang and Tuma 1993).

Results

Models in Tables 1-3 test the data on the adoption of the CCP program in the US, Canada and Australia as a factor of variables such as intrinsic organizational properties, involvement in environmental activities, proximity ties, and change agency ties. Results are presented in terms of four models. Model 1 includes variables which describe different intrinsic organizational properties; when controlling for the other types of variables, the only intrinsic organizational property that has a marginally significant effect ($p < .05$) on the CCP adoption hazard rate is the level of education per capita for the Canadian population. Results show that the higher the level of education per capita is

in a Canadian city, the more likely that city is to adopt the CCP program. These results are in accordance with the diffusion literature which emphasizes that innovators are likely to be more educated than non-innovators (Ryan and Gross 1943; DiMaggio and Powell 1983). Yet, in the case of US and Australia none of the intrinsic properties have an effect on the adoption hazard rate. Hence, results in Tables 1-3 fail to support the hypothesis about the influence of intrinsic organizational properties.

[Tables 1-3 about here]

Model 2 introduces the variables which measure cities' prior involvement in environmental activities. On the one hand, this model shows that cities which are involved in environmental programs such as Clean Cities Coalition (CCC) and Rebuild America (ReAm) in the US, or Green Communities (GC) in Canada are considerably more likely ($p < .001$; $p < .01$) to adopt the CCP program than cities that are not involved in these programs. Adding these variables dramatically improves the fit of model 3 over model 2 in the case of the US cities ($p < .001$; $\chi^2 = 32.82$, $d_f = 2$) and moderately in the case of Canadian cities ($p < .01$; $\chi^2 = 7.96$, $d_f = 1$). On the other hand, model 2 shows that Australian cities that are involved in environmental activities sponsored by the National Environmental Awards for Local Governments (NEALG) are as likely to adopt the CCP program as the cities which are not involved in these environmental activities.

Model 3 tests the hypothesis about the spatial and administrative proximity between previous and potential adopters. Event history models in Tables 1-3 show that the variable which measures the spatial and administrative proximity between previous

and potential adopters has a significant effect ($p < .001$) for the CCP program's adoption hazard rate in all three countries. The fit of model 3 compared to that of model 2 is significantly improved when adding the county proximity variable for the US ($p < .01$; $\chi^2 = 8.9$, $d_f = 1$), Canada ($p < .01$; $\chi^2 = 10.01$, $d_f = 1$), as well as Australia ($p < .05$; $\chi^2 = 4.88$, $d_f = 1$). In the US and Canada, cities which are situated in the same county with cities that have already adopted the CCP program are significantly more likely to adopt the program than cities which are situated in a different county. Similarly, in Australia cities which are situated in the same Regional Organization of Councils (ROC) with cities that have already adopted the CCP program are significantly more likely to adopt the program than cities which are situated in a different ROC.

In model 4 I include the effect of formal ties between local governments and change agencies. Results in Tables 1-3 show that the variable ties to ICLEI change agency has a positive and significant effect for the CCP adoption rate in the US ($p < .001$) and Australia ($p < .05$). Thus, American and Australian cities that are members of ICLEI are more likely to adopt the CCP program than cities that are not members of ICLEI. In the case of Canadian cities, the variable membership in ICLEI has no significant effect for the likelihood of adopting the CCP/PCP program; yet, the variable membership in the Federation of Canadian Municipalities (FCM) has a significant effect ($p < .01$) on the CCP/PCP adoption rate such that Canadian cities that are members of FCM are more likely to adopt the program than cities which are not FCM members. Similarly, in the case of Australian cities the variable membership in ENVIRONS has a significant effect ($p < .01$) on the CCP adoption rate such that Australian cities which are members of ENVIRONS are more likely to adopt the program than cities which are not ENVIRONS

members. Adding the variable membership in ICLEI greatly improves the fit of model 4 compared to that of model 3 in the case of US cities ($p < .001$; $\chi^2 = 11.62$, $d_f = 1$). In the case of Canadian cities, adding the variables membership in ICLEI and FCM moderately improves the fit of model 4 compared to model 3 ($p < .05$; $\chi^2 = 6.18$, $d_f = 2$). In the case of Australian cities, adding the variables membership in ICLEI and membership in ENVIRONS significantly improves the fit of model 4 compared to that of model 3 ($p < .01$; $\chi^2 = 12.48$, $d_f = 2$).

Discussion

The event history analysis shows that the diffusion of the CCP program among US municipalities is positively influenced by the institutionalization processes which act in three institutional spheres. First, the variable participation in environmental activities, which measures the effect of the organizational structure institutional sphere, has a strong influence on cities' decision to adopt the program. The CCP program was adopted mainly by cities which were already involved in environmental activities such as Clean Cities Coalition (CCC) and Rebuild America (ReAm). Since representatives of cities which participate in CCC and ReAm are likely to perceive the CCP program as having a higher level of institutionalization than representatives of cities which do not participate in these programs, they are more likely to adopt the CCP program.¹² Second, the variable proximity between municipalities, which is measuring the effect of the local field institutional sphere, has a strong influence on the adoption hazard rate. Representatives of

¹² The cities involved in the CCC and ReAm programs were likely to perceive the CCP program as having a high level of institutionalization since these programs' goals of improving air quality and energy efficiency could be easily aligned with the CCP program's goals of reducing greenhouse gas emissions (Vasi 2004).

cities which are spatially close to previous adopters of the program are likely to learn from their neighbors and from change agents how to rationalize the CCP program such that they perceive local actions against global climate change to be taken for granted as appropriate and necessary for their city. Thus, cities located in the same county with cities which are previous adopters of the CCP program are more likely to perceive this program as having a high level of institutionalization and to adopt it than cities which are located in a different county. Third, the variable measuring the effect of supra-national institutional sphere also has a strong influence on the adoption hazard rate. Cities which are ICLEI members are more likely to adopt the CCP program than cities which are not ICLEI members, because they are directly exposed to the marketing efforts of this international change agency and, therefore, are likely to perceive it as having a high level of institutionalization.

While the diffusion of the CCP practice among US cities was positively influenced by institutionalization processes which operate in intrinsic, local and global spheres, it was negatively influenced by the processes which operate in the state institutional sphere. The issue of global climate change has probably been the most politicized and contentious environmental problem in the US over the last few years. US based environmental organizations have fought an uphill battle against the powerful fossil fuel industry to influence the national policy on climate change (McCright and Dunlap 2000; Lisowski 2002). Numerous industry front groups such as the Global Climate Coalition, the Global Climate Information Project, the Coalition for Vehicle Choice, the Advancement of Sound Science Coalition, and the American Policy Center launched massive advertising campaigns in the US against any agreement aimed at

reducing greenhouse gas emissions internationally.¹³ Due to the efficient fossil fuel lobby the federal government rejected any national or international policies aimed at reducing greenhouse gas emissions during the period 1991-2002, prompting some social scientists to call the US government's response to the global climate change problem a "non-policy" (Lutzenhiser 2001).¹⁴

The US federal government's lack of involvement in actions against climate change has contributed to the perception that the CCP program is based on norms, values, and expectations which are not appropriate and necessary features of either national or local governments. Although some governmental agencies such as the Department of Energy or the Environmental Protection Agency encourage individual actions for conserving energy and limiting emissions of greenhouse gases, no national change agency organizations are involved in marketing the CCP program for US municipalities. Results from interviews with ICLEI staff members show that the ICLEI international change agency received little direct support from US governmental agencies.¹⁵ To distribute information about the CCP program, ICLEI relies heavily on its staff's informal networks, who attend conferences organized by national associations such as the US Conference of Mayors or The National League of Cities and use interpersonal communication for marketing the CCP program. According to one ICLEI staff member:

It's not like we are on TV or something, and we don't pay for booths at, say, the US Conference of Mayors meetings but I would say that our

¹³ For more information about the fossil fuel industry's campaigns, see Gelbspan (2001) or Burton and Rampton (1997).

¹⁴ The Republican chairman of the Senate Energy Committee has pronounced the Kyoto Protocol in 1997 as "Dead on arrival" while the Senate has voted 95-0 against it. Subsequent efforts to introduce a bipartisan bill to curb global warming by senators John McCain and Joe Lieberman met strong opposition and were defeated 55-43.

¹⁵ The US Environmental Protection Agency was one of the sponsors of the *Urban CO₂ Reduction Program* during the period 1991-1993. However, while the EPA funded some of the projects related to the CCP program, it was not directly involved in marketing the program to local governments.

exposure to local governments is significant. We attend [conferences] and we sometimes will speak at a panel, or will interact with people there, but it's not like, if you register for the conference and receive a packet, than ICLEI materials will be in that packet. We are relying on speaking on a panel, or circulating at different of the social events, or if we actually have an exhibit, but that's rare because the fees are usually higher than we are able to afford.

The federal government's negative attitude toward national or international policies to limit greenhouse gas emissions has contributed to the perception that sustained actions global climate change can harm the American economy. Moreover, a number of US politicians have vociferously contested the global climate change science; for instance, Republican Senator James Inhofe who has chaired the Committee on Environment and Public Works has bluntly declared in 2003 that climate change is "the greatest hoax ever perpetrated on the American people". Consequently, to market the CCP program for local governments in the US, ICLEI change agents had to emphasize the program's secondary benefits such as saving energy and money more than the primary goal of reducing greenhouse gases (Vasi 2004). As ICLEI staff members recognize, their marketing efforts are hampered by the lack of support from national agencies and are dependent on government's policies:

There is only so much that one NGO can do and we are at the whim of what the national government decides to do and how the whole [climate change] debate is shaped in the US. We don't have complete latitude over that, we have to operate confined within the national government's policy [...] We hear a lot from the national government that climate change action is costly. We try to use the cities which are making progress with this [CCP program] to show that they are doing it without suffering any economic constraints, and in fact are benefiting.

The event history analysis shows that the diffusion of the CCP program among Canadian municipalities is positively influenced by one variable measuring the effect of the organizational structure sphere, the participation in environmental activities. The CCP

program was adopted mainly by Canadian cities which were already involved in the environmental activities promoted by the Green Communities programs. The variable proximity between municipalities, which is measuring the effect of the local field institutional sphere, has a strong influence on Canadian cities' decision to adopt the program. Moreover, the national institutional sphere has also an important influence on the CCP/PCP program's adoption hazard rate. Cities which are members of the Federation of Canadian Municipalities (FCM) are considerably more likely to adopt this program than cities which are not members of this national association of local governments. However, the variable measuring the effect of the supra-national institutional sphere has an insignificant effect on the cities decision to adopt the CCP/PCP program such that cities which are members of ICLEI are as likely to adopt this program as cities which are not members of ICLEI.

Results from interviews with FCM staff members show that the Canadian state has been relatively supportive for the CCP/PCP program, such that local and national actions against global climate change had a relatively high level of institutionalization.¹⁶ Prior to 1998, the Canadian federal government offered financial support from a program called The 20% Club, which was similar to the CCP program but had a more ambitious goal of reducing emission of greenhouse gases in Canadian cities by 20%. The main governmental agency which funded this program was *Environment Canada*, but only a select group of cities received their support. Simultaneously, the ICLEI international change agency was marketing the CCP program for Canadian cities on its own. In 1998, the 20% Club and the CCP programs merged and the program was called Partners for

¹⁶ The fossil fuel lobby had a limited influence on the Canadian federal government, even if it was effective in persuading the premier of the Alberta province, which has abundant oil and gas resources, to oppose the Kyoto Protocol.

Climate Protection (PCP) and was officially adopted as a campaign of the *Federation of Canadian Municipalities*. While ICLEI stopped its marketing efforts, FCM became the main national change agency which marketed the CCP/PCP program and used its own ties to local governments to disseminate information about the program. For instance, one FCM staff member states that the CCP/PCP program was marketed to FCM members during their annual conferences:

With the marketing of PCP, we had a lot of high profile campaigns: FCM has its annual conference every summer and that is attended by all FCM members, and we have the Sustainable Communities conference. We also had a campaign to get municipalities to endorse model resolutions supporting Kyoto, and part of that mentioned the PCP program.

The FCM national change agency was able to market the CCP/PCP program more efficiently than ICLEI for two reasons. Firstly, FCM receives support from the federal government through Environment Canada and the Climate Action Fund and has many members in most Canadian provinces.¹⁷ Secondly, FCM has experience in working with representatives of local governments and sometimes hires them for marketing the CCP/PCP program. This strategy proved to be particularly efficient; as one FCM staff member notes:

In one of the provinces we had two people on the ground, one who was a former municipal staff person and other a former mayor of a major city. They've been both hired as consultants and they've been doing a lot of promotion in terms of getting recruitment. Because the message is coming from a former mayor and a former municipal staff person, they have a lot of credibility; they already know a lot of the players in this province. I think that it was largely because the person who was communicating the message was someone they already trusted, someone who had actually gone through the program.

¹⁷ It is interesting to note that FCM has the fewest members in Quebec, which has also the fewest number of cities involved in the CCP/PCP program.

Finally, the event history analysis shows that the diffusion of the CCP program among Australian municipalities is positively influenced by the local field institutional sphere and by the national and international institutional spheres. The variable proximity between Australian cities, which is measuring the effect of the local field institutional sphere, has a strong influence on cities' decision to adopt the program. The national and international institutional spheres have also an important influence on the CCP program's adoption hazard rate. The national institutional sphere was extremely important for the diffusion of the CCP program among Australian cities; by recognizing the importance of the global climate change problem and taking concrete steps to limit emissions of greenhouse gases at the level of local governments the Australian government contributed to the institutionalization of local actions against global climate change.¹⁸ As the CCP Australia program report shows, the government became the main national sponsoring agency for the CCP program through the establishment of the Australian Greenhouse Office (AGO) which was responsible for monitoring, reporting and evaluating the program as well as for providing specific packages to enable local governments to implement action plans:

The Commonwealth Government set up the Australian Greenhouse Office in 1998 as the lead Commonwealth agency on greenhouse matters. The AGO is the first and only dedicated greenhouse office of its type in the world. The AGO [...] recognizes the role of local government, industry, non-government organizations and the community in reducing Australia's emissions. Participation in CCP Australia has been identified by the strategy as one of the most effective means by which local governments can contribute to Australia's national greenhouse effort.

¹⁸ Although the Australian fossil fuel industry is very powerful and played a considerable role in government's decision to reject the Kyoto Protocol, it has not succeeded in opposing a number of progressive politicians' initiative of establishing a governmental greenhouse office.

The event history analysis shows that Australian cities which are members of ICLEI and of ENVIRONS are considerably more likely to adopt this program than cities which are not members of these organizations. These results are supported by the interviews with representatives from ICLEI and ENVIRONS Australia and the analysis of their annual program reports and newsletters, which reveal that during the period 1997-1999 the CCP program was delivered through a direct partnership between ICLEI and ENVIRONS. This partnership combined the technical expertise of ICLEI change agents, who possessed the knowledge about the environmental benefits of the CCP program, with the social marketing expertise of ENVIRONS personnel, who had in-depth experience with the Australian local governments' working environment, barriers and competing priorities. Moreover, due to the strong support received from the Australian government, ICLEI events were organized not only in association with ENVIRONS events but also with the Local Government Managers Association Conference, and with the National General Assembly of Local Government run by the Australian Local Government Association (ALGA). As ICLEI documents show, the partnership between ICLEI, ENVIRONS and AGO resulted in a highly effective marketing of the CCP program to the Australian cities:

CCP Australia is delivered through a partnership between ICLEI and the AGO – and that partnership is stronger than ever. The partnership is based on two organizations bringing to CCP different and complementary strengths. ICLEI brings to CCP vast experience in program delivery with local government by providing tools to assist in the practical implementation of environmental programs. [...] The AGO provides an invaluable policy framework that supports the role of local governments in the national context. The AGO's policy and financial support, together with its technical and program expertise, play a vital role in the program's success.

Summary and Conclusion

The event history analysis and the qualitative analysis show that the diffusion of the CCP program is influenced by factors which operate within different concentric institutional spheres. At the most basic level of these spheres, the CCP program is adopted by local governments involved in environmental activities compatible with this program, since these local governments are likely to perceive the CCP program to have a higher level of institutionalization than local governments which are not involved in these activities. Similarly, although in Canada the CCP/PCP program had a relatively high level of institutionalization at the level of the state, cities which were involved in environmental activities were likely to perceive the program as having an even higher level of institutionalization and to adopt it. In Australia, however, the CCP program had a high level of institutionalization at the level of the state due to the strong involvement of the federal government in marketing the program; hence, cities' prior participation in environmental activities had no significant effect on their decision to adopt the program.

The local field institutional sphere has an important effect on cities' decision to adopt the CCP program such that cities which are spatially and administratively proximate to cities which already adopted the program are more likely to adopt it than cities which are distant. The effect of the local field sphere is manifest for all three countries because social contagion is stronger between proximate cities and the marketing strategy adopted by ICLEI targeted clusters of cities that were spatially and administratively proximate. The national and supra-national institutional spheres have also an important effect on the diffusion of the CCP program. In the US, the diffusion of the CCP program was influenced by the marketing efforts of an international change

agency, but not by the marketing efforts of national agencies. In Canada, the diffusion of the CCP program was influenced initially by both national and international change agencies, yet, starting in 1998 only a national agency was involved in marketing the program. Since in Australia the CCP program was marketed from the beginning by both national and international change agencies, the program had a high level of institutionalization at the level of the state and diffused faster than in the US and Canada.

This study makes an important contribution to the diffusion research by examining not only the role of organizational structures and fields but also that of national and supra-national institutional contexts. Thus, I develop a framework which includes the interaction between organizations' internal, local, national and supra-national institutional spheres. This research has shown that organizational practices can diffuse, albeit slowly, despite having a low level of institutionalization in the national institutional sphere, if they have a high level of institutionalization in the supra-national sphere. Moreover, this research has demonstrated that the diffusion of organizational practices is fastest when they have a high level of institutionalization in national as well as international institutional spheres due to the fact that they are marketed by both national and supra-national change agencies. Further systematic comparisons between the diffusion of different types of organizational practices in various national institutional contexts would enhance our understanding of diffusion processes.

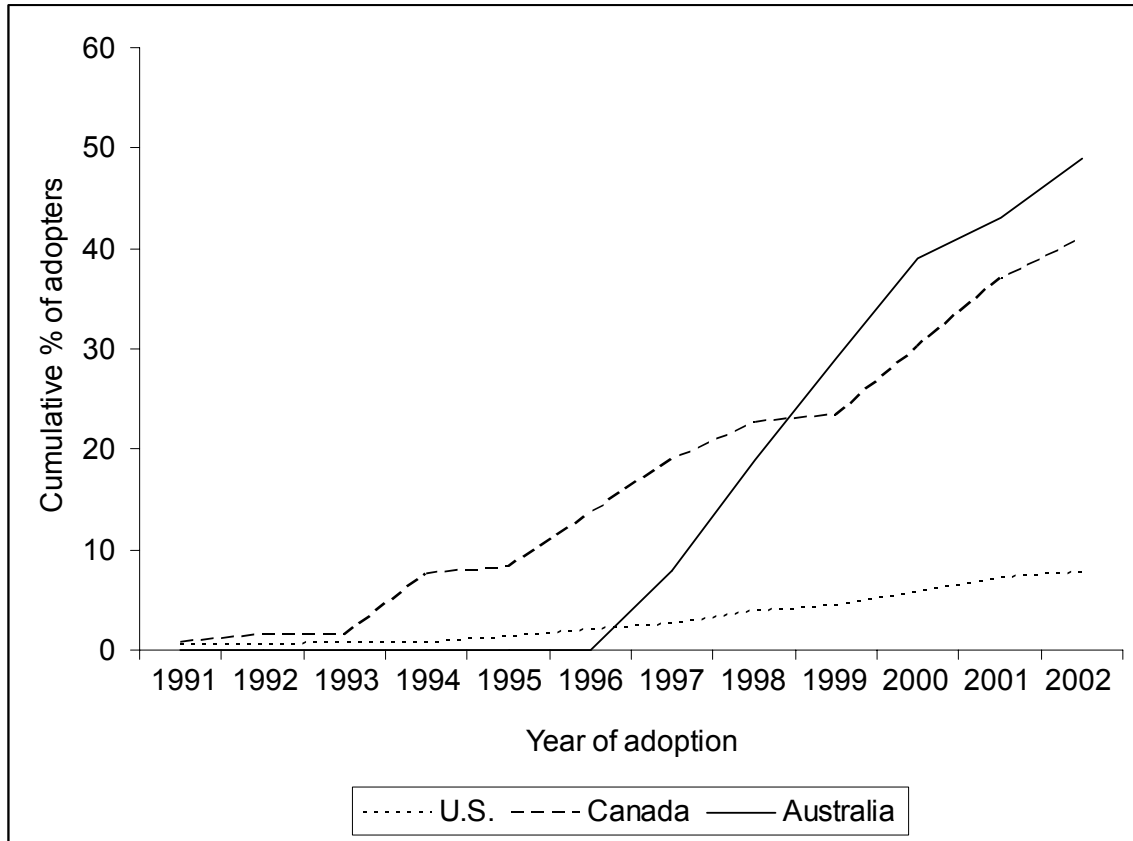


Figure 1. Cumulative percentages of U.S., Canadian and Australian cities which adopted the CCP program in the period 1991-2002.

Table 1. Maximum likelihood estimates of the effects of intrinsic organizational properties, spatial and administrative proximity to previous adopters, environmental activities, and change agency ties on the US-CCP adoption hazard (Log-Logistic distribution).

	Model 1	Model 2	Model 3	Model 4
<i>Intrinsic properties</i>				
Size of population	.251** (.087)	.004 (.090)	.022 (.080)	.004 (.077)
Level of education	.246*** (.070)	.181* (.070)	.153* (.063)	.112 (.057)
Environmental NGOs	.344*** (.056)	.201*** (.052)	.193** (.047)	.096 (.048)
<i>Environmental activities</i>				
Participation in CCC		1.190*** (.209)	1.153*** (.192)	.957*** (.173)
Participation in ReAm		.707*** (.185)	.665*** (.170)	.627*** (.157)
<i>Proximity ties</i>				
County proximity			.414*** (.066)	.410*** (.060)
<i>Change agency ties</i>				
Membership in ICLEI				.915*** (.185)
	Log Likelihood			
	268.41	235.59	226.69	215.07

Note: * $p < .05$
 ** $p < .01$
 *** $p < .001$

Table 2. Maximum likelihood estimates of the effects of intrinsic organizational properties, spatial and administrative proximity to previous adopters, environmental activities, and change agency ties on the Canada-CCP/PCP adoption hazard (Log-Logistic distribution).

	Model 1	Model 2	Model 3	Model 4
<i>Intrinsic properties</i>				
Size of population	.000* (.000)	.000** (.000)	.000* (.000)	.000 (.000)
Level of education	.049*** (.012)	.034** (.010)	.025* (.011)	.022* (.011)
Environmental NGOs	.001 (.005)	.006 (.005)	.005 (.005)	.005 (.004)
<i>Environmental activities</i>				
Participation in GC		.547** (.179)	.544** (.176)	.543** (.176)
<i>Proximity ties</i>				
County proximity			.263*** (.034)	.242*** (.035)
<i>Change agency ties</i>				
Membership in FCM				.811** (.321)
Membership in ICLEI				.005 (.224)
	Log Likelihood			
	122.26	114.30	104.2	98.02

Note: * p<.05
 ** p < .01
 *** p < .001

Table 3. Maximum likelihood estimates of the effects of intrinsic organizational properties, spatial and administrative proximity to previous adopters, environmental activities, and change agency ties on the Australia-CCP adoption hazard (Log-Logistic distribution).

	Model 1	Model 2	Model 3	Model 4
<i>Intrinsic properties</i>				
Size of population	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Level of education	.011 (.025)	.016 (.025)	.020 (.022)	.019 (.019)
Environmental NGOs	.007 (.008)	.009 (.008)	.008 (.007)	.004 (.005)
<i>Environmental activities</i>				
Participation in NEALG		.107 (.134)	.091 (.118)	.175 (.097)
<i>Proximity ties</i>				
ROC proximity			.472*** (.101)	.464*** (.084)
<i>Change agency ties</i>				
Membership in ENVIRONS				.291** (.093)
Membership in ICLEI/AGO				.243* (.104)
	Log Likelihood			
	41.55	41.23	36.35	23.87

Note: * $p < .05$
 ** $p < .01$
 *** $p < .001$

Annex 1. Descriptive statistics

	Mean	SD	Min	Max
Size of population	99270	289081	25056	7311966
Level of education	22.75	11.76	1.60	71.20
Environmental NGOs	1.62	5.18	0	78
Participation in CCC	.07	.24	0	1
Participation in ReAm	.05	.21	0	1
Membership in ICLEI	.03	.17	0	1

Table 4. Descriptive statistics for the independent variables in the US.

	Mean	SD	Min	Max
Size of population	174164	371616	25007	2450000
Level of education	17.00	7.18	8	42
Environmental NGOs	7.01	20.74	0	132
Participation in GC	.14	.35	0	1
Membership in ICLEI	.13	.34	0	1
Membership in FCM	.79	.40	0	1

Table 5. Descriptive statistics for the independent variables in Canada.

	Mean	SD	Min	Max
Size of population	192153	540570	20493	3276207
Level of education	3.21	2.42	1	14
Environmental NGOs	4.44	7.66	0	44
Participation in NEALG	.27	.44	0	1
Membership in ICLEI/AGO	.27	.44	0	1
Membership in ENVIRONS	.47	.49	0	1

Table 6. Descriptive statistics for the independent variables in Australia.

References:

- Abrahamson, Eric and Gregory Fairchild.** 2001. "Knowledge industries and idea entrepreneurs: New dimensions of innovative products, services and organizations". Pp. 147-178, in *The entrepreneurship dynamic. Origins of entrepreneurship and the evolution of industries*, edited by Schoonhoven Claudia Bird and Elaine Romanelli. Stanford University Press. Stanford, California.
- Alberts Sheldon.** 1999. "The Dangers of Global Warming Fail to Interest Canadians". *National Post*, December 30.
- Burton Bob and Rampton Sheldon.** 1997. "Thinking Globally, Acting Vocally: The International Conspiracy to Overheat the Earth".
<http://www.prwatch.org/prwissues/1997Q4/warming.html>
- Brechin Steven.** 2003. "Comparative public opinion and knowledge on global climatic change and the Kyoto Protocol: the US versus the world?". *International Journal of Sociology and Social Policy*, Vol. 23, 10: 106 – 134.
- Brunton Colmar.** 2003. *Community Perceptions of Climate Change. A Report on Benchmark Research.* Colmar Brunton Social Research and Redsuit Advertising.
- Bulkeley, Harriet and Michele Betsill.** 2003. *Cities and climate change. Urban sustainability and global environmental governance.* Routledge. London and New York.
- Chaves, Mark.** 1996. "Ordaining women: the diffusion of an organizational innovation". *American Journal of Sociology*, Vol. 101, 4: 840-873.
- Cole Robert.** 1985. "The macropolitics of organizational change: A comparative analysis of the spread of small-group activities". *Administrative Science Quarterly*, 30: 560-585.
----- 1989. *Strategies for learning.* University of California Press, Berkeley.
- Davis, Gerald.** 1991. "Agents without principles? The spread of the poison pill through the intercorporate network". *Administrative Science Quarterly*, 36: 583-590.
- Davis, Gerald and Greve Henrich.** 1997. "Corporate elite networks and governance changes in the 1980s". *American Journal of Sociology*, Vol. 103, 1:1-37.
- DiMaggio, Paul and Walter Powell.** 1983. "The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields". *American Sociological Review*, 48: 147-160.
- Dobbin Frank and John Sutton.** 1998. "The Strength of a Weak State: The Rights Revolution and the Rise of Human Resources Management Divisions". *American Journal of Sociology*, 104: 441-476.

Fisher, Dana. 2002. *Toward an environmental state: the domestic roots of the global climate change regime*. In press.

Fligstein Neil. 1991. "The structural transformation of American industry: An institutional account of the causes of diversification in the largest firms, 1919-1979", Pp. 311-336, in *The New Institutionalism in Organizational Analysis*, edited by Powell Walter and DiMaggio Paul. The University of Chicago Press.

Frank David John, Hironaka Ann, Schofer Evan. 2000. "The Nation State and the Natural Environment over the Twentieth Century". *American Sociological Review*, 2000, Vol. 65: 96-116.

Friedland, Roger and Robert Alford. 1991. "Bringing Society Back In: Symbols, Practices and Institutional Contradictions". Pp. 232-267 in *The New Institutionalism in Organizational Analysis*, edited by Powell Walter and DiMaggio Paul. The University of Chicago Press.

The Gallup Poll. 2001 (April 09) "Americans Consider Global Warming Real but not Alarming".

Gelbspan Ross. 1998. *The Heat Is on: The Climate Crisis, the Cover-Up, the Prescription*. Perseus Publishing.

Hedström, Peter. 1994. "Contagious collectivities: On the spatial diffusion of Swedish trade unions, 1890-1940". *American Journal of Sociology*, Vol. 99, 5: 1157-1179.

Hedström, Peter, Sandell Rickard, Stern Charlotta. 2000. "Mesolevel Networks and the diffusion of social movements: The case of the Swedish Socialist Democratic Party". *American Journal of Sociology*, Vol. 106, 1: 145-172.

Hoffman Andrew and Ventresca Marc. 2002. *Organizations, Policy, and the Natural Environment. Institutional and Strategic Perspectives*. Stanford University Press.

Immerwahr John. 1999. "Waiting for a Signal: Public Attitudes toward Global Warming, the Environment and Geophysical Research". *A Report for the American Geophysical Union (AGU)*. http://www.agu.org/sci_soc/attitude_study.html

Levy David and Rothenberg Sandra. 2002. "Heterogeneity and Change in Environmental Strategy: Technological and Political Responses to Climate Change in the Global Automobile Industry" Pp: 173-194 in *Organizations, Policy, and the Natural Environment. Institutional and Strategic Perspectives*, edited by Hoffman Andrew and Ventresca Marc Stanford University Press.

Lisowski, Michael. 2002. "Playing the Two-level Game: US President Bush's Decision to Repudiate the Kyoto Protocol". *Environmental Politics*, in press.

Lounsbury, Michael. 2001. "Institutional sources of practice variation: staffing college and university recycling programs". *Administrative Science Quarterly*, Vol. 46: 29-56.

Lutzenhiser, Loren. 2001. "The contours of US climate non-policy". *Society and Natural Resources*. 14: 511-523.

McAdam Doug, and Dieter Rucht. 1993. "The cross-national diffusion of movement ideas". *Annals of the American Academy of Political and Social Science*. 528: 56-74.

McCright, Aaron, Riley Dunlap. 2000. "Challenging global warming as a social problem: An analysis of the conservative movement's counter-claims". *Social Problems*, Vol. 47, 4: 499-522.

Meyer, John and Brian Rowan. 1977. "Institutionalized organizations: formal structure as myth and ceremony", *American Journal of Sociology*, 83: 340-363.

Meyer John, John Boli, George Thomas, and Francisco Ramirez. 1997. "World Society and the Nation-State". *American Journal of Sociology*, Vol. 103, 1: 144-181

Meyer John, Frank David John, Ann Hironaka, Evan Schofer, and Nancy Brandon Tuma. 1997. "The Structuring of a World Environmental Regime, 1870-1990". *International Organization*, Vol. 51, 4: 623-651.

Myers, Daniel. 1997. "Racial rioting in the 1960s: An event history analysis of local conditions". *American Sociological Review*, 62:94-112.

----- . 2000. "The diffusion of collective violence: infectiousness, susceptibility and mass media networks". *American Journal of Sociology*, Vol. 106, 1: 173-208.

Powell Walter and DiMaggio Paul. 1991. *The New Institutionalism in Organizational Analysis*. The University of Chicago Press.

Rogers, Everett. 2003. *Diffusion of innovations*. The Free Press.

Ryan, Bryce and Neal Gross. 1943. "The diffusion of hybrid seed corn in two Iowa communities". *Rural Sociology*, 8: 15-24.

Scott, Richard. 1991. "Unpacking institutional arguments", Pp. 164-183, in *The New Institutionalism in Organizational Analysis*, edited by Powell Walter and DiMaggio Paul. The University of Chicago Press.

Scott Richard and John Meyer. 1994. *Institutional Environments and Organizations*. Sage Publications.

Scott, Richard. 1995. *Institutions and organizations*. Thousand Oaks, California: Sage.

Soule, Sarah. 1997. "The student divestment movement in the United States and tactical diffusion: the shantytown protest". *Social Forces*, Vol. 75, 3: 855-883.

Soule, Sarah and Yvonne Zylan. 1997. "Runaway train? The diffusion of state-level reform in ADC/AFDC eligibility requirements, 1950-1967". *American Journal of Sociology*, Vol. 103, 3: 733-762.

Strang David. 1991. "Adding Social Structure to Diffusion Models: An Event History Framework." *Sociological Methods and Research*, 19: 324-353.

Strang, David and John Meyer. 1993. "Institutional conditions for diffusion". *Theory and Society*. 22: 487-511

Strang, David and Nancy Brandon Tuma. 1993. "Spatial and temporal heterogeneity in diffusion". *American Journal of Sociology*, 99, 3: 614-639.

Strang, David and Sarah Soule. 1998. "Diffusion in organizations and social movements: From hybrid corn to poison pills". *Annual review of sociology*. Vol. 24: 265-290.

Tolbert Pamela, Lynne Zucker. 1983. "Institutional Sources of Change in the Formal Structure of Organizations: The Diffusion of Civil Service Reform, 1880-1935" *Administrative Science Quarterly*, Vol. 28, 1: 22-39

Turton Hal and Clive Hamilton. 2002. *Updating per capita emissions for industrialized countries*. The Australia Institute - www.tai.org.au

Van den Bulte, Christophe and Gary L. Lilien. 2001. "Medical Innovation Revisited: Social Contagion versus Marketing Effort". *American Journal of Sociology* Vol. 106, 5: 1409-1435.

Vasi, Bogdan. 2004. "From Thinking Globally to Acting Locally: The Diffusion of the Program against Global Climate Change among Local Governments in the U.S." In press.

Wejnert, Barbara. 2002. "Integrating models of diffusion of innovations: A conceptual framework". *Annual Review of Sociology*. Vol. 28: 297-326.

Zylan, Yvonne and Soule Sarah. 2000. "Ending welfare as we know it (again): Welfare state retrenchment, 1989-1995". *Social Forces*, Vol. 79, 2: 623-652.