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The Political Economy of Environmental Movements: U.S. Experience and Global Movements

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ABSTRACT: In 1972 a public choice model predicted that the incipient environmental movement in the United States would grow but encounter overwhelming industrial opposition. Twenty years later we find the model overstated this opposition. Environmental pressure groups were able to pass substantial legislation, resist counter forces, and reduce most targeted pollutants. A revised public choice model predicts that the success of the present global environmental movement depends on (1) information flows between scientists and the public on the potential costs of deterioration, and (2) means for reducing the costs of regulation such as relying more on market incentives.

KEYWORDS: Environment (political aspects), environmental movements, environmental policy, environmental protection, politics (environmental aspects), public choice models

The Earth Summit in Rio de Janeiro during June of 1992, symbolized an emerging global environmental movement. Attempts to control global pollutants such as green house gases, ozone depleting chemicals, and nuclear wastes involve a number of political and economic issues. How do environmental movements develop, and how do they motivate political actors to pass effective environmental regulations? When these impose substantial costs on key industries or threaten to slow economic growth what kinds of counterforces develop? How can environmental movements deal with these counterforces to preserve and implement effective environmental regulations?

The experience of the environmental movement in the United States from 1970 to 1990 may provide some insights into these questions. In 1972 one of the

authors (Everett) used an abstract public choice model¹ from economics to analyse the then incipient environmental movement. That study generated three basic predictions:

- (1) news media information on environmental deterioration could motivate political actors to pass effective environmental regulations in spite of special interest industrial groups and relatively weak environmental groups;
- (2) industrial counterforces would tend to win in the long run unless substantial media coverage and environmental education helped keep strong information flows between voters and politicians; and
- (3) politicians would seek technological escape routes which could allow both rapid economic growth and reduced environmental deterioration. Some of these, however, would break down and cause new pollution and long run environmental damage.

The present paper evaluates these predictions for the 1970-90 period and draws implications for the emerging global environmental movement. In summary we found that the 1970-90 movement was able to push through effective environmental regulation. Counterforces did not have as much power as the model suggested, and most targeted pollutants dropped below mandated standards. Consistent flows of information between scientists, the public, and political actors seem to explain much of this resiliency. Some technological escape routes, however, broke down, with serious long term consequences such as acid rain.

HISTORICAL EVALUATION OF THE 1972 INSIGHTS

The Development of the Environmental Movement

The development of the environmental movement in the late 1960s and early 1970s tended to support the first prediction. Organized environmental pressure groups had small memberships and modest financing compared to industry groups. Increased information on environmental pollution through the mass media correlated with increased public concern, as expressed in public opinion polls and increased memberships of environmental pressure groups. Most politicians began to support substantially stronger federal pollution control regulations, albeit with a lag of several years. Expenditures on pollution control equipment increased with a similar lag.

The data in Table 1 provides a more detailed analysis of this initial stage of the environmental movement.² Column 1 suggests the weakness as well as the rapid growth of organized environmental pressure groups during the 1960s.

YEAR	MEMBERSHIPS of the main environment groups	NEWS MEDIA % of three major news indexes	OPINION POLLS % who feel pollution is very serious		EXPENDITURES capital total (billions of 1982 dollars)	
			(3)	(4)	(5)	(6)
	(1)	(2)	(3)	(4)	(5)	(6)
60	60,000	0.10			4	
61		0.10			5	
62		0.10			5	
63		0.10			5	
64		0.20			6	
65	112,500	0.30	28		7	
66	382,500	0.50	48		8	
67	497,500	1.50	53		9	
68	555,000	0.80	55		10	
69	705,000	1.50			12	
70	874,000	3.90	69		14	
71	929,000	4.10			17	
72	1,011,000	4.90		80	21	43
73	1,098,500	4.20		71	25	49
74	1,183,500	3.70		61	29	50
75	1,248,500	2.70		62	34	54
76	1,294,500	2.90		65	38	57
77	1,455,000	2.60		62	42	59
78		2.20		65	46	62
79		2.10		57	50	63
80		2.40		60	54	62
81		1.80		60	57	60
82		2.50				58
83		3.30				60
84		2.60				65
85		2.50				68
86		2.40				71
87	3,400,000	2.60				71
88		3.60				74
89			72	63		
90			64	58		74

TABLE 1.
Indices of the Environmental Movement

These groups ranged from 60,000 to about 700,000 members with an estimated \$1.2 to \$14 million in revenues (at \$20 per member) of which only a small portion could be devoted to lobbying. Organized pressure groups of such limited size and funding probably could not have directly contacted more than a small fraction of voters, nor systematically lobbied more than a small group of political representatives.

The news media may have compensated for this weakness by conveying information on environmental problems directly to political representatives (column 2, Table 1). Environmental crises such as killer smogs and oil spills, books such as Rachel Carson's *Silent Spring* (1962) on DDT poisoning, and political pronouncements such as President Johnson's Natural Beauty and Conservation message in 1965 (*CQ Almanac*, 1965, 464) helped stimulate this media attention. By 1970, indexes of the news media increased their citations of environment articles from 0.1% to almost 4% of all articles, or to 15 pages of citations (Table 1, column 2).

The increase in media information correlated with increased public awareness and concern about environmental problems. In columns 3 and 4, Table 1, we have spliced together public opinion polls which suggest a substantial increase in public concern about pollution from under 30% in the mid-1960s to 80% in the early 1970s. Although such time series for opinion polls on the environment remain imperfect, qualitative comments from polling experts corroborated this increased concern in the late 1960s.³

By the early 1970s, the growing news media information, data from public opinion polls, and the size and lobbying efforts of environmental groups increased the benefits which many national politicians could expect from supporting environmental protection. For example, President Nixon had shown no interest in environmental issues until 1969, when he suddenly began to champion major environmental legislation (Hardin, 1982, 35). Congressional representatives introduced literally hundreds of environmental laws – usually just for the record – to indicate their support for environmental protection (*Congressional Index*, 1968-69 and 1970-71). A few, like Senator Edmund Muskie of Maine, expended the time and energy necessary to push through laws which for the first time gave the federal government the power to set and enforce environmental standards.

These laws and a Supreme Court interpretation (*Sierra Club vs Morton*, 1971) gave private environmental organizations the right to sue private industry and government agencies to help set and enforce environmental standards. As a result basic industries such as steel, coal and automobiles began to spend heavily on pollution abatement. Capital for pollution abatement grew, in real terms, from a few billion dollars in the early 1960s, mainly for municipal waste water treatment, to nearly \$40 billion by the mid-1970s (column 5, Table 1). Hence, the public choice model produces fruitful insights into the initial growth of the environmental movement of the 1970s.

Counterforces of the Mid-1970s

The second prediction of the 1972 model, on counterforces, does not hold up as well. Although counterforces arose and news media attention to environmental concerns dropped substantially, the counterforces were not able to roll back environmental laws and regulations, even in the context of energy shortages, stagflation, and the severe recession of 1982.

For example, a few basic industries such as primary metal, paper mills, chemicals, petroleum, and electric utilities vigorously opposed most air quality regulations. They had to devote more than ten per cent of their investments to pollution control equipment by the mid-1970s (Council on Environmental Quality (CEQ), 1976, 154-66). They, along with other affected industries such as coal and automobiles, modified their trade associations into stronger national coalitions to moderate and roll back the environmental laws. Although no hard data exist, Vietor (1980) estimates the funding of these trade associations in hundreds of millions of dollars per year.⁴

These industrial counterforces, in the context of the energy shortages and stagflation of the mid-1970s and with the support of the Nixon and Ford administrations, were able to delay the implementation of some pollution standards. Yet in 1977, Congress voted to preserve most of the rigorous air pollution standards and added restraints on industrial location in and degradation of relatively clean areas (Vietor, 1980; CEQ, 1977, 22). Industry spending on pollution abatement increased throughout the 1970s. Under President Carter, Congress also passed other important environmental laws such as the 1977 Surface Mining Act.

Continued information flows on environmental problems may help explain this failure to roll back environmental regulations, in spite of the well-organized counterforces and stagflation. Although news media attention to environmental problems dropped, it stayed well above pre-environmental movement levels (Table 1). Also, environmental educational material, presentations, and courses grew rapidly at least into the mid-1970s (Schoenfeld and Disinger, 1978). This helped provide a constant flow of information. Public concern dropped but still remained at moderate levels well above the pre-environmental movement period, even with the economic problems of the 1970s (Table 1). For example, on questions about the importance of the environment versus energy, respondents split about equally: roughly 40% for each during the 1970s (Gillroy and Shapiro, 1986).

Also, institutional changes lowered the cost of information to environmental groups. For example, environmental impact statements, which the National Environmental Policy Act of 1969 mandated for government projects, allowed environmental groups to find out quickly about programmes they opposed (Andrews, 1976, Ch.7). Congressional reforms which opened committee sessions, including the preparation of the final drafts of bills (markup sessions),

reduced the cost of keeping up with legislation (Evans, 1982; Rieselbach, 1986, 52-6, 136-7).

The Reagan Counterforces of the 1980s

The Reagan administration and current economic conditions posed a greater counterforce to the environmental movement than did the energy crisis and stagflation of the 1970s. Inflation exceeded ten per cent in 1980. Then tight monetary policies to reduce it created a severe recession in 1982 and a large drop of exports which created a trade deficit of over \$100 billion per year. Yet the Reagan administration also failed to roll back the environmental laws, regulations, and spending.

Reagan's election represented a mandate for, among other things, reducing inflation and stimulating economic growth through reduced government regulation. Reagan appointed administrators such as James Watt and Anne Gorsuch, who previously had represented business interests, to the Department of Interior and the Environmental Protection Agency (EPA), respectively. His administration also launched a major effort to 'reform' the environmental laws by making the regulations more flexible and market oriented, returning more control to the states, and using stricter benefit-cost criteria, which in essence would reduce control standards (House and Shull, 1985).⁵

Nevertheless, Congress and the Reagan administration stalemated over environmental issues. The administration could not reform or roll back environmental legislation and Congress generally could not push it forward. The environmental movement did obtain some strengthening of hazardous waste laws, more wilderness areas, and more environmentally oriented administrators at EPA and Interior. Total expenditures on pollution abatement, capital plus operating costs, started to rise again after the 1982 recession (column 6, Table 1).

Moreover, most targeted environmental indices continued to improve. Overall national indexes for most of the air pollutants which the environmental laws of the 1970s had targeted showed very substantial decreases of 20% to over 80% (Table 2). Although many large cities failed to meet the national air quality standards in some pollutants such as ozone, on average the nation met the primary standards. The Council on Environmental Quality (1989, 34-5, 140, 116-17) estimates that the nation's lakes, rivers, and streams generally maintained their quality in spite of rapid increases in use, and actually improved their quality in some areas. Control over toxic wastes, particularly for surface mining and pesticide residuals, also improved. The government made substantial additions to national parks, wilderness areas, and wildlife preserves.

Again, the persistence of the environmental movement may fit the model in terms of continued or increased information flows. Congressional committees held almost daily hearings open to the press on 'mismanagement' at the Interior

Year	Sulphur dioxide agm ppm	Carbon monoxide 8hr ppm	Ozone 1hr ppm	Nitrogen dioxide aam ppm	TSP ($\mu\text{g}/\text{m}^3$) agm	Lead ($\mu\text{g}/\text{m}^3$) quarter
1975	0.015	11.96	0.153	0.029	61.9	1.04
1976	0.016	11.32	0.153	0.029	62.8	1.05
1977	0.014	10.66	0.155	0.029	62.9	1.16
1978	0.013	10.07	0.156	0.029	62.4	1.04
1979	0.012	9.07	0.134	0.029	63.1	0.77
1980	0.011	8.52	0.136	0.025	64.2	0.61
1981	0.010	8.29	0.127	0.024	57.4	0.48
1982	0.010	7.95	0.125	0.024	48.7	0.48
1983	0.009	7.74	0.137	0.023	48.4	0.41
1984	0.009	6.99	0.124	0.024	49.9	0.38
1985	0.009	7.11	0.123	0.024	47.7	0.26
1986	0.009	6.67	0.118	0.024	47.6	0.15
1987	0.009	6.67	0.125	0.024	48.6	0.11
1988	0.009	6.42	0.136	0.024	49.7	0.09
1989	0.009	6.32	0.116	0.023	48.0	0.07
1990	0.008	5.89	0.114	0.022	47.3	0.07
Primary Standard	0.030	9.00	0.120	0.050	75.0	1.50

Source: CEQ, 1991, 276

agm = annual geometric mean; ppm = parts per million; aam = annual arithmetic mean; $\mu\text{g}/\text{m}^3$ = micrograms per cubic metre

TABLE 2.
National Ambient Concentrations of Targeted Air Pollutants

Department and EPA, where Watt and Gorsuch became prime news media targets. Environmental articles in the news media indexes increased again in 1982-84 (Table 1). Although courses on the environment may have dropped off in the late 1970s, many remained in the curriculum and grew in other areas such as nature study centres (Disinger, Schoenfeld and Howe, 1988).

These information flows may help explain the continued high level of public concern for the environment and the growth of environmental groups. Public opinion polls (column 4 table 1) continued to show that a majority of the public in the early 1980s felt that pollution was a serious problem. Again, observations from polling experts support these imperfect inter-year comparisons.⁶ These variables may also help to explain the continued gain in environmental group membership and funding during the 1980s (Table 1).⁷ Even industry groups restrained their lobbying efforts for fear of adverse publicity and loss of corporate good will (House and Shull, 1985).

Finally, many political actors may have continued to support environmental regulation not only for the direct voter appeal but also because the expected economic benefits of regulation exceeded the expected costs. Although pollution abatement expenditures equalled 1.5% to 2% of GNP by the 1980s and over 10% of investment for a few basic industries, these expenditures apparently had little negative impact on the overall economy. Econometric studies which the CEQ and EPA commissioned or utilized over the years found that pollution control raised inflation slightly, lowered productivity and gross national product slightly, and had no net impact on foreign trade.⁸ Moreover, measurable economic benefits, particularly reduced morbidity and mortality from air pollution, seemed to outweigh the increased pollution abatement costs by 1978 (CEQ, 1979, 666-7).

Technological Escape Routes and Their Breakdowns: 1970-90

The third prediction from the 1972 article (that new technologies which will apparently allow both economic growth and environmental quality may end up creating serious long term pollution) seems to hold up. Substantial evidence exists that rational political actors attempted to use technological escape routes to maximize votes. For example, presidents continually espoused both economic growth and environmental quality (CEQs, 1972/86/88, "The President's message") and assumed that they could coexist (e.g. CEQ 1990, x, 9). According to many economists, the solution lay in developing and substituting environmentally safe technologies for dangerous ones.⁹ The imposition of environmental regulations and improvement of a number of environmental indices along with continued economic growth from 1970 to 1990 seemed to support this position.

Nevertheless, during those years breakdowns in some of the technological escape routes led to unexpected long-term environmental damage. Well established examples include ozone build-ups in large cities and acid rain. Theoretically, pollution control devices on cars would allow their continued growth in urban areas while still reducing air pollution. In fact, increased car usage swamped the control devices and generated higher levels of some pollutants such as nitrogen oxides and ozone in a number of large cities. Table 2 shows that on average nationally, ozone eventually dropped below the national primary standard of the 1970s. However, it stayed well above that standard in many cities. The 1990 amendments to the Clean Air Act may finally reduce these ozone levels, but not until the late 1990s (CQ Almanac, 1990, 231).

Acid rain provides another example of the breakdown in a technological escape route. Scrubbers and tall stacks on coal burning electric power plants would reduce sulphur oxides and transport residuals away from populated areas. Theoretically, this would allow continued growth of these plants and improved environmental quality. In fact, substantial evidence emerged that this technological fix created acid rain which could damage forest resources and other

vegetation (CQ Almanac, 1990, 237). Scientists are still trying to assess the actual and potential damage. The 1990 amendments to the Clean Air Act seek to reduce sulphur oxide emissions, but not for five to ten years. In the meantime, long term changes in the acidity of soils will continue to occur.

Nuclear energy may also represent a potential breakdown in a technological escape route. Nuclear advocates in the 1960s viewed nuclear power as an environmentally clean, low cost source of energy (Barnett and Morse, 1963). US nuclear reactors increased from 20 in 1970 to more than 100 in 1990. Although only one serious accident has occurred in the United States, at Three Mile Island, nuclear waste presents a long term potential hazard. Nuclear waste increased from less than 0.1 metric ton in 1970 to more than 20 metric tons by 1990 (CQ 1990, 447-8). This waste – which still has no permanent, long-term, ‘safe’ storage facilities – and possible serious accidents constitute a potential breakdown in the nuclear escape route.

Depletion of the atmospheric ozone layer does not strictly represent a breakdown in a technological escape route. It does, however, demonstrate how lags occur in recognition and then control of serious pollutants with rapid economic and technological growth. Industry scientists considered chlorofluorocarbons (CFCs) harmless chemicals which could facilitate rapid growth in refrigeration, including air conditioning, and aerosol propelled consumer products. Global releases of CFCs grew rapidly from their introduction in the 1930s to 700 million kilograms a year by the late 1980s. Atmospheric concentrations nearly doubled from 1975 to 1985 (CEQ 1990, 468-9). Definitive scientific information lagged behind long term damage to the ozone layer until the mid 1980s. Then the US political system took another five years to set a ten year time table for banning CFC emissions, in the 1990 amendments to the Clean Air Act.

IMPLICATIONS FOR THE GLOBAL ENVIRONMENTAL MOVEMENT OF THE 1990S

An abstract public choice model, revised in light of experience in the United States to place greater emphasis on the role of information flows, may provide some insights for the emerging global environmental movement. Such a model predicts that scientific information on serious pollutants should result in at least moderate levels of news media information, public concern, and the continued existence and funding of environmental pressure groups. These forces would in turn increase the perceived benefits (votes or public support)¹⁰ to political actors for publicly espousing environmental protection. At the same time, environmental protection could reduce votes or public support by slowing economic development. Thus, some political actors would attempt to find technological

escape routes, some of which would break down. The model cannot predict beforehand which forces will prevail, but it can provide useful insights.

For example, we would speculate that the expected benefits to most political actors of effectively controlling and phasing out CFCs will continue to exceed the expected costs. Thus, the model would tend to predict effective control of the targeted pollutants in the next few years and probable stabilization of the outer ozone layers. The definitive scientific information along with available substitutes for CFCs motivated political actors to begin phasing out CFC emissions through instruments such as the 1987 Montreal Accords and the 1990 amendments to the Clean Air Act. Then information showing high CFC levels and a possible hole in the ozone layer over the Northern Hemisphere motivated President Bush and other political actors to accelerate this phase-out. The environmental impact of the CFC substitutes remains unknown, however, and another technological breakdown could occur.

On the other hand, the public choice model suggests that substantial reductions in the emissions of greenhouse gases would take much longer to control than CFCs. Many political actors, particularly those in the United States and less developed countries, would probably find the present costs, in terms of reduced economic growth and lost votes, too high to support substantial reductions of CO₂ emissions, regardless of the uncertain future costs of not reducing them.

Political behaviour in the first two years of the 1990s tends to support this speculation. For example, countries' positions on reducing CO₂ emissions before the June 1992 Earth Summit in Rio de Janeiro seem to fit the model fairly well. Western Europe and Japan, with little fossil fuel and high fuel efficiency, and particularly the Netherlands, with a great deal to lose from global warming and rising sea levels, pushed for restrictions on CO₂ emissions. The United States, with its abundant coal and oil reserves, and some less developed countries which remained more dependent on traditional industrial development based on coal and oil, resisted those restrictions. President Bush, for example, refused to attend the Rio conference until negotiators removed binding commitments from the CO₂ reduction treaty (CQ, May 16 1992, 1340).

Even if convincing scientific information confirmed the global warming hypothesis, our model suggests that political actors would seek technological escape routes rather than slow economic growth. Nuclear energy continues to represent such an escape route. By 1990 public concerns about accidents, long term waste storage, and high costs had brought construction of new plants to a virtual halt. To help reopen this technological escape route, President Bush attempted to reduce the flow of information. On the advice of his Council on Competitiveness, chaired by Vice President Quayle, Bush issued an executive order waiving the public hearing before a nuclear power plant goes into operation. This left only the requirement for a public hearing before construction (CQ, May 23 1992, 1437).¹¹

In conclusion, a narrow rationalistic public choice model postulates that

moving toward global environmental protection depends on the benefit-cost calculations of voters and political actors. The model and experience in the United States suggest that the perceived benefits of environmental protection depend on information flows about potential global environmental catastrophes and their health, economic, and amenity costs. The actual and perceived costs of environmental protection depend on several variables such as: using relatively efficient market systems for implementing regulations (Baumol and Oates, 1988); modifying gross national product (GNP) data to include environmental capital and its deterioration (Costanza, 1991); and providing voters with adequate income, status, and other basic material and psychological needs by means other than continued rapid economic growth (Meadows, Meadows, and Randers, 1992).¹²

NOTES

¹ The public choice model starts with the assumption that individuals make political, as well as economic, decisions based on their narrow self-interested, expected benefit-cost calculations. Anthony Downs' (1957) article, which still forms the basic paradigm (Mueller, 1979; Hardin, 1982; and McLean, 1987), assumed that:

- (1) three ideal types of actors exist in the political economy: voters, organized pressure groups, and elected politicians;
- (2) the first two provide pressure for public goods; and
- (3) the latter respond so as to maximize expected votes.

Politicians and voters, it is supposed, lack information about each other's attitudes and behaviours. Narrower, special interest groups find it relatively easy to organize and provide flows of information between politicians and voters. Broader, more general interest groups find it relatively difficult to organize and provide similar flows of information, given the free rider problem (Olson, 1965). Thus, special interest groups tend to control political systems within limits.

The news media often help set these limits. When an issue becomes of general enough interest the news media will increase coverage for long run profitability. This tends to generate more direct information flows between voters and politicians. As a result, the special interest pressure groups tend to lose power and the general interest tends to reassert itself (Downs, 1957, 137; Downs, 1972; Stigler, 1961; Tullock, 1967, 57-61).

² Sources: MEMBERSHIPS from Mitchell, 1979, and for late 1980s CQ Jan 20 1990; NEWS MEDIA from *Readers' Guide, Public Affairs*, and *New York Times* indexes; POLLS from several similar public opinion polls: (1) 1965-70 (Erskine, 1972) "Compared to other parts of the country, how serious, in your opinion, do you think the problem of air/water pollution is in this area – very serious?" (2) 1972-81 (Gillroy and Shapiro, 1986) "As for their effect on your way of life in the next few years, say within 10 years, how would you rate the importance of each of the following topics (air pollution) – very important?" (3) 1989-90 (Hueber, 1991) "... pollution is very serious..." EXPENDITURES: capital stock data from Kappler and Rutledge, 1982. Total capital and operating

expenditures per year from CEQ, 1991, 220. These represent rough estimates given variations in accounting procedures.

³ Erskine (1972, 120) estimated that when polling on the environment started in 1965, about 10% of the public considered pollution important; but by 1972 the majority held that opinion. Gillroy and Shapiro (1986) concluded that the environment had become a mid-level public concern by the late 1960s. Murch (1971, 101) postulated that the mass media had generated, or at least heavily influenced, the concern over environmental pollution.

⁴ Their strategies included convincing the public through grass roots 'educational' campaigns that private enterprise could take care of the problem without regulation, and that rigorous regulation would exacerbate the energy shortage and stagflation. These associations gave large campaign contributions to key politicians. They provided extensive technical information to agencies and congressional committees responsible for implementing the environmental regulations on a continual year-after-year basis. When advantageous, they opposed rigorous environmental regulation through the court system (Wenner, 1982).

⁵ The issues, of course, were more complex than simply pro or con environmental regulation. For example, economists were pointing out that regulation through direct controls on industries, as opposed to pricing of effluents or sale of permits to pollute, increased the cost of abatement 30% to 50% (Baumol and Oates, 1988, pp 171-2). Thus, market approaches might allow more pollution abatement. Also, some large firms might welcome environmental regulations to restrict competition (Buchanan and Tullock, 1975).

⁶ Polling experts such as Gillroy and Shapiro (1986) observed a consistently high level of public support for environmental protection and a willingness to help pay to reduce it. During the severe recession of 1982, the *Gallup Report* (1982), found a majority opposed reducing environmental regulation even if that would help business.

⁷ Hardin (1982) reviews related explanations for why public interest environmental groups continued to grow after the more intense public concern of the early 1970s and did not wither away as Olson's model (1965) would predict. For example, Mitchell (1979) suggests that the costs of membership remained very low with convenient mailings for dues and return envelopes. In return members may have felt they were leveraging their dues through government regulations to obtain environmental goods, although their individual dues or contributions probably made little or no difference. Members also may have enjoyed a sense of belonging to a movement. Margolis (1982) draws on sociobiology to develop a rational model of human behaviour based on altruism as well as narrow self interest. After individuals have amassed a certain level of personal goods, they may have a higher marginal utility from helping produce social goods.

⁸ Abatement expenditures increased inflation by only 0.2% and had a "negligible" impact on gross national product (CEQ, 1976, 147-154; CEQ, 1979, 432, 435, 655). Environmental regulations had little negative impact on productivity (-0.05% to -0.3%) and no overall impact on foreign trade (CEQ, 1979, 436; CEQ, 1980, 387-9).

⁹ Barnett and Morse (1963), for example, provide a rigorous development of this idea as it applies to natural resource scarcity and economic development. (See part IV for an overview.)

¹⁰ Although the public choice model assumed democratic voting, it should also apply to nondemocratic systems where the leader depends, at least partly, on broad public support to retain power. Thus, in the last section of the paper 'votes' or 'voters' will also mean public support or supporters.

¹¹ Bush also reduced information flows required by the 1990 amendments to the Clean Air Act. He waived the public comment period required when large polluters planned to exceed permit levels. His Council on Competitiveness had recommended this direct confrontation with the legislation so that firms could more rapidly change their production schedules and techniques (CQ Almanac, 269).

¹² This last, but important, method of reducing the perceived costs of environmental protection falls partly outside of public choice models based on narrow self-interest and economic rationality. Other disciplines such as psychology and sociobiology may provide valuable insights about how masses of people might satisfy their basic material and psychological needs through non-material growth systems (Margolis, 1982). These fields may also provide insights on how altruism, as well as narrow self-interest, affects behaviour. That is, how might voters trade off narrow, short run self-interest and rapid economic growth to reduce the probability of long term environmental catastrophe? Future public choice models may be able to incorporate these factors and develop more accurate predictions about future environmental movements.

REFERENCES

- Andrews, Richard N.L. 1976 *Environmental Policy and Administrative Change*. Lexington, Mass, Lexington Books.
- Barnett, Harold J. and Chandler Morse 1963 *Scarcity and Growth*. Baltimore: Johns Hopkins Press.
- Baumol, William J. and Wallace E. Oates 1988 *The Theory of Environmental Policy*, 2nd ed. Cambridge, Cambridge University Press.
- Carson, Rachel 1972 *Silent Spring*. Boston, Houghton Mifflin.
- Congressional Index (1968-69; 1970-71). New York, Commercial Clearing House, Inc.
- Congressional Quarterly (CQ) (various Years), *Almanac*.
- Congressional Quarterly (CQ) (various dates), *Weekly Report*.
- Costanza, Robert (editor) 1991 *Ecological Economics: The Science and Management of Sustainability*. New York, Columbia University Press.
- Council on Environmental Quality (CEQ) (various years), *Environmental Quality: Annual Reports of the Council on Environmental Quality*. Washington, DC, US Government Printing Office.
- Council on Environmental Quality (CEQ) 1989 *Environmental Trends*, Washington, DC, US Government Printing Office.
- Disinger, John F., Clay Schoenfeld, and Robert Howe 1988 "Recent Developments in College Level Environmental Studies Courses and Programs". Washington DC, ERIC (Educational Resource Information Center).
- Downs, Anthony 1957 "An Economic Theory of Political Action in a Democracy", *Journal of Political Economy* 65(April): 135-50.
- Downs, Anthony 1972 "Up and down with Ecology – The Issue-Attention Cycle", *The Public Interest* 28: 38-50.
- Evans, Brock 1982 "People Power", *Audoban* 84 (Sept.): 12-15.
- Everett, Michael D. 1972 "The Role of Formal Education in Environmental Movements", *Journal of Economic Issues* 6: 87-95.

- Erskine, Hazel 1972 "The Polls: Pollution and Its Costs", *Public Opinion Quarterly* **26**: 120-35.
- Gallup Poll Report* 1982 (Nov) 14.
- Gillroy, John M. and Robert Y. Shapiro 1986 "The Polls: Environmental Protection", *Public Opinion Quarterly* **50** (Summer): 270-9.
- Hardin, Russell 1982 *Collective Action*. Baltimore, Johns Hopkins University Press for Resources for the Future.
- House, Peter W. and Roger D. Shull 1985 *Regulatory Reform: Politics and the Environment*. Lanham, MD, University Press of America.
- Hueber, Graham 1991 "Americans Report High Levels of Environmental Concern, Activity", *The Gallup Poll Monthly*, No. 307, 6-12.
- Kappler, Frederic G. and Gary L. Rutledge 1982 "Stock of Plant and Equipment for Air and Water Pollution Abatement in the United States, 1960-81", *Survey of Current Business*, (Nov.) 18-25.
- Margolis, Howard 1982 *Selfishness, Altruism, and Rationality: A Theory of Social Choice*. Cambridge, Cambridge University Press.
- McLean, Iain 1987 *Public Choice: An Introduction*. Oxford, Basil Blackwell.
- Meadows, Dennis L., Donella H. Meadows, and Jorgen Randers 1992 *Beyond the Limits*. Post Mills, Vermont, Chelsea Green.
- Mitchell, Robert Cameron 1979 "National Environmental Lobbies and the Apparent Illogic of Collective Action", in *Collective Decision Making: Applications from Public Choice Theory*, edited by Clifford S. Russell, pp. 87-121. Baltimore, Johns Hopkins University Press for Resources for the Future.
- Murch, Arvin W. 1971 "Public Concern for Environmental Pollution", *Public Opinion Quarterly* **25**: 99-108.
- Mueller, Dennis C. 1979 *Public Choice*. Cambridge, Cambridge University Press.
- Olson, Mancur 1965 *The Logic of Collective Action*, Cambridge, Mass, Harvard University Press.
- Rieselbach, Leroy N. 1986 *Congressional Reform*, Washington, DC, Congressional Quarterly, Inc.
- Schoenfeld, Clay and John Disinger (editors) 1978 "Environmental Education in Action Case Studies of Environmental Studies Programs in Colleges and Universities Today", ERIC.
- Stigler, George J. 1961 "The Economics of Information", *Journal of Political Economy*, **69**: 213-25.
- Tullock, Gordon 1967 *Toward a Mathematics of Politics*. Ann Arbor, University of Michigan Press.
- Vietor, Richard H. K. 1980 *Environmental Politics and the Coal Coalition*. College Station, Texas A&M University Press.
- Wenner, Lettie M. 1982 *The Environmental Decade in the Court*. Bloomington, Indiana University Press.