

ENVIRONMENTALISM AS CULTURAL PARADIGM

CAROLYN ABBOTT

GLENN HARRIS

*Environmental Studies Program
St. Lawrence University*

ABSTRACT

This research examined the application of Kuhn's paradigmatic theory to the study of the environmental movement. It explored the extent of a paradigmatic shift toward environmentally considerate values. This study of residents in northern New York State showed slight support for a new environmental paradigm (NEP). The variables of age, education, and income did not correlate with scoring on the NEP scale. Significant differences in NEP values were not found between males and females, or between those with a high school education and those with any college education. A significant difference was found for age; those under forty were more supportive of the NEP values when the NEP was defined in a way that included reorganizing social structure and community. Respondents showed different support of different subsets of the NEP. Most strongly supported were concepts recognizing the place of humans within the balance of nature. Less accepted was the concept that economic growth should be controlled, and least accepted were values opposing science and technology.

Thomas Kuhn's concept of paradigm applies to the universally recognized scientific achievements that provide the basis for all study in a discipline for a period of time. Research, after a time, begins to discover phenomena which cannot be explained in the context of the current paradigm. At this point, a "scientific revolution" occurs, whereby a new paradigm is created to provide a basis for further research. Paradigmatic shifts have been identified in changes from geocentrism to heliocentrism or from Newtonian to Einsteinian mechanics; the approach to astronomy or physics was changed fundamentally after these breakthroughs occurred [1].

The concept of paradigmatic change has been extended to encompass culture as a whole. In this context, a dominant paradigm has been defined as “the collection of norms, beliefs, values, habits, and so on that form the world view most commonly held within a culture.” It is a “frame of reference through which individuals, or collectively, a society, interpret the meaning of the external world” or “a mental image of social reality that guides expectations in a society” [2]. In the case of industrial society, it is a view that justifies and legitimates the institutions and practices of a market economy [3]. The prevalent set of beliefs in the industrialized West today has been given many labels including the *Dominant Social Paradigm* [4], the *Dominant Western Worldview* [5], and the *Technocratic Paradigm* [6].

The Dominant Social Paradigm

The dominant social paradigm (DSP) constitutes a worldview in which humans dominate the environment. Nature is viewed as a resource that can be controlled. Some writers have traced attitudes concerning humans and nature to the Judeo-Christian belief that humans were given dominion over earth [7]. The Biblical superiority of humans over nature is complemented by the belief that humans, because of their unique abilities, are “exempt” from the ecological limits which constrain other species. This human exemptionalist view purports that, through ingenuity, human survival is insured [5, 8, 9].

In addition, the DSP assumes that a free market is the best form of political economy for allocating scarce resources. Devotion to the market economy is paired with belief in the need for ever-expanding growth. Thus, the measure often used to determine the well-being of a society is the growth of its gross national product. This growth will be sustained by an availability of resources.

An underlying belief in this paradigm is faith in science and technology to overcome shortages of natural resources and perpetuate the growth of a material-oriented society. One who vocalized this faith is E. J. Simon [10], who believes that the human mind is the “ultimate resource,” which can overcome, through innovation, any problems that develop in society. John Maddox, in his book *The Domsday Syndrome*, wrote that:

. . . the contributions which science and technology have made . . . to the improvement of natural resources have meant that nations no longer need to fear that their survival will be threatened by a lack of essential raw materials [11].

The development of scientific management is highly connected with the development of DSP values. Management based on scientific principles relies on division of labor and quantification, and has led to a reliance on experts. The scientific allegiance to quantification extends to many areas, such as the use of cost-benefit analysis in decision-making. The ordering of society in the context of a worldview managed by science is believed to be best accomplished

in a centralized manner, whereby power and authority are greatly concentrated at the top.

A New Environmental Paradigm

The Kuhnian theory of paradigmatic change purports that the dominant paradigm will remain until enough evidence is discovered that does not fit into its context. Events such as the oil crisis of the early 1970s and the publicity generated since the environmental movement of the 1960s have forced many people to question the validity of the DSP. For example, Rachael Carson's *Silent Spring* brought to the attention of many people the limitations of technological development in the field of pesticide application. Until the publication of Carson's book, people marvelled at the ability of chemicals to destroy agricultural pests and vectors of disease. *Silent Spring* sobered this enthusiasm by outlining the damage such pesticides created as they permeated through the ecosystem, killing fish and thinning the shells of birds of prey [12].

According to the theory outlined by Kuhn, evidence showing the limitations of the current cultural paradigm should lead to the emergence of a new cultural paradigm. Several scholars have recognized the transition to a more ecologically sound worldview which contradicts the values outlined in the DSP. Whether labeled *The Person-Planetary Paradigm* [6], *The Alternative Environmental Paradigm* [13], or the *New Environmental Paradigm* [4], this set of beliefs recognizes the position of humans within nature, the concept of scarce resources, and the rejection of the commitment to economic growth. The market economy is questioned as the best allocator of resources. This opinion was voiced by Barry Commoner, ". . . the environmental crisis . . . reveals serious incompatibilities between the private enterprise system and the ecological base on which it depends. . . . The emergence of a full blown crisis in the ecosystem can be regarded . . . as the signal of an emerging crisis in the economic system" [14].

In the new environmental paradigm (NEP) more emphasis is placed on nonmaterial measures of well-being, such as community, participation in that which effects our lives, and human skills. Inglehart differentiated between "material" and "post-material" values [15]. People raised in the period of peace and prosperity after World War II place more value on conditions such as satisfying work and participation in government decision-making than on the acquisition of money or material possessions. Unlike those values espoused by people with the dominant view, these beliefs are seen to be best pursued in decentralized social and political communities [3].

Also included in the NEP/DSP polarization are a number of factors concerning the structure of society. Cotgrove identified several areas of thought where environmentalists hold different outlooks [3]. He divided environmentalists into two groups, the traditional and the radical. The traditional espouse most of the points in the NEP, but seek order and traditional authority in their decentralized

communities. The radical environmentalists, on the other hand, stress the liberation from hierarchy and the individual autonomy that could be found in a decentralized community. An example of a traditional environmentalist is E. F. Schumacher who, at the conclusion of his book *Small Is Beautiful: Economics As If People Mattered* outlined a model community that exhibits structure and order that emphasizes stability [16]. Murray Bookchin, on the other hand, can be identified as a radical environmentalist, placing much greater emphasis on individual autonomy and freedom [17].

METHODS

To explore the values of DSP and NEP, a questionnaire on environment and society was developed using questions from previously administered scales in addition to those developed by the authors. Four questions were taken from the NEP scale constructed by Dunlap and Van Liere [4] to determine the extent to which members of environmental groups and the general public accept the content of the New Environmental Paradigm. Eight questions were taken from the Environmental Response Scale, originally developed by Wiegles and Wiegles [18] and used generally to measure environmental attitudes. A number of questions were taken or adopted from a series of scales developed by Cotgrove to test various aspects of environmental beliefs such as environmental concern, anti-industrialism, anti-science, post-material values, and anti-economic values [3].

The questionnaire was administered to sixty-five subjects selected from three populations. The first group consisted of citizens living in the area around a zinc mine in Pierrepont, New York. The questionnaire was administered on a door-to-door basis to houses in closest proximity to the mine. Of twenty-seven households approached, twenty-four yielded interviews, for a response rate of 89 percent. This group represented citizens with potential or actual problems due to environmental impacts resulting from mine activities.

The second group consisted of twenty-five individuals who influenced waste management policy in northern New York. Two local newspapers were examined between April 1983 and October 1983 for names of those mentioned in conjunction with waste issues. From the initial list of sixty people, twenty-five (40%) were randomly selected. The decision-makers included among others, county planners, waste managers, local legislators, city lawyers, and engineers.

Also interviewed were six citizens in the area who had been involved in waste issues through citizen action groups. Demographic information for the total sample is provided in Table 1.

It should be noted that the sample is limited by its size ($N = 65$). Nevertheless, northern New York is very sparsely populated, and based on other surveys conducted in this region [19, 20], we believe the respondents are representative of opinion in this region.

Table 1. Demographic Variables

	<i>Percent of Sample Population</i>
Gender	
male	58.2
female	41.8
Age	
under 20	1.8
20-29	23.6
30-39	32.7
40-49	14.5
50-65	25.5
65+	1.8
Education	
high school or less	41.8
2 year college	12.7
4 year college	18.2
graduate work	27.3
Annual Income	
under \$5,000	12.7
5,000-9,000	9.1
10,000-14,999	14.5
15,000-19,999	20.0
20,000-29,999	12.7
30,000+	30.9

RESULTS AND DISCUSSION: ACCEPTANCE OF NEP

Two scales were developed to measure commitment to the NEP. These scales were constructed by combining various questions related to a common theme. One scale, referred to hereafter as the NEPscale, contained questions on all of the aspects of the NEP/DSP dichotomy. The second scale excluded questions which would differentiate the radical from the traditional environmentalists. This scale, labeled the NEP*scale, was devised in order to control for this possible distinction in attitudes. Table 2 illustrates the degree of support for the NEP and NEP* scales.

Table 2. Average Scores on NEP and NEP* Scales

	<i>No. of Items</i>	<i>Maximum Score</i>	<i>Mean Score</i>	<i>Average</i>
NEPscale	24	168	102	4.3
NEP*scale	20	140	88	4.4

Note: Questions were coded on a basis of 1-7. Scores over 4 indicate support for NEP/NEP* scales.

This table shows a mild level of acceptance of NEP values, not as strong as that found by Dunlap and Van Liere in their survey of 806 Washington State residents in 1976 [4]. On their scale of twelve questions designed to measure the NEP, a majority of the population gave a pro-NEP response in each instance. In contrast, only thirteen of twenty-four questions on our NEPscale elicited a pro-NEP response from a majority of the population. This contrast could be due to a difference in the values of the populations surveyed in the two studies. Washington State residents are recognized as having a high level of environmental concern. Residents of northern New York State might be less supportive of environmental values.

The difference between the results could also be attributed to the content of the scales themselves. The shorter scale used by Dunlap and Van Liere [4] did not include as many of the concepts identified here and included in the NEP* scale. Their NEP scale did not question values that concern how to live according to the NEP. The scale used in this study examined such additional values including decentralization versus centralization, participation versus expert judgment, hierarchy, and equality. If values central to traditional lifestyles are not easily transformed in the emergence of the NEP, this rationale could explain the discrepancy in findings between the studies. We will return to a discussion of this rationale shortly.

RESULTS AND DISCUSSION: DEMOGRAPHIC VARIABLES

Having discovered a slight acceptance of NEP values, it is important next to investigate the characteristics of those who espouse the NEP. Mannheim speaks of certain groups as the "carriers" of value systems [21]. He states that "just as a style of art cannot be fully described without an account of the artistic school and of the social group it represents, so we can never really understand changes in a style of thought unless we study the social groups which are the carriers of these changes."

Table 3 contains the Pearson product moment correlations for the demographic variables of age, education, and income. None of these variables were found to correlate significantly with either NEP scale.

Table 3. Correlations for Demographic Variables
and NEP/NEP* Scales

	<i>NEPscale</i>	<i>NEP*scale</i>
Age	-.20	-.11
Education	.07	.14
Income	.01	.05

NEP and Income

Maslow's psychological hierarchy of human needs as applied to income gradations was not upheld in this study [22]. The data did not substantiate the concept that those with more money are more likely to be concerned with higher order needs such as self-actualization, which might promote development of NEP values. Instead, environmentalism may be viewed as an important consideration at all levels of need. At the lower levels, environmental quality is important for food, air, and water. At higher levels, the environment can be seen as an aesthetic good. In an overview of studies measuring environmental concern, Van Liere and Dunlap discovered mixed results, with a few studies supporting that higher income groups show greater environmental concern, some showing a negligible association, and others reporting a negative relationship [23]. Buttel and Flinn reason that those with lower income should express more concern about the environment, since they are exposed to poorer environmental conditions [24]. This consideration does not seem particularly relevant, since both rich and poor in our sample live in a rural setting and those with low incomes are not slum residents, to whom Buttel and Flinn mainly refer.

The data collected in this study also help strike down the concept of environmentalism as an elite concern, whether it be elite because of the level on Maslow's hierarchy, or whether it be purposely exclusive as authors such as Freiden [25], May [26], and Tucker [27] have suggested.

NEP and Education

Education does not correlate with scoring on the NEP/NEP* scales. Cotgrove and Duff compared the support of post-material values among industrialists, trade unionists, environmentalists, and the general public in England [28]. They found no significant difference in post-material scores related to the level of education of those surveyed. Their finding supported the view that it is the focus and basis of the education rather than the level of education one attains that plays a role in the adoption of values. The lack of a relationship between environmental values and education could perhaps be attributed to the different types of education followed at the advanced level. Cotgrove and Duff argued that values are formed during adolescence and guide the choice and type of education and occupation [28].

In further exploring the effect of education on acceptance of the NEP, a *t*-test was performed to compare scores of those with a high school education or less with those who have attained higher levels of education. As shown in Table 4, although those with college experience scored slightly higher on both NEP scales, the difference did not prove to be significant. This finding again supports the contention that socialization, rather than level of education, plays a substantial role in the development of values.

Table 4. Demographic *t*-Tests (Pooled Variance Estimate)

	<i>NEP</i> scale ^a Mean Score	<i>t</i> -Test	<i>NEP</i> *scale ^b Mean Score	<i>t</i> -Test
Age				
< 40 years	105.7		90.4	
> 40 years	97.2	-2.06*	84.6	-1.58
Gender				
male	101.6		88.2	
female	102.4	-.19	87.6	.17
Education				
high school (or less)	100.0		85.0	
college	102.2	.31	88.4	.61

* $p < .05$ ^a Maximum score for *NEP*scale = 168.^b Maximum score for *NEP**scale = 140.Higher scores indicate greater acceptance of *NEP* values.

NEP and Gender

As illustrated in Table 4, although women scored slightly differently than men on the *NEP*/*NEP** scales, these differences were not statistically significant. This result contributes to the growing body of research asserting that gender has little or no effect on environmental concern [23].

Perhaps the lack of difference in *NEP* attitudes between the genders is related to the changing role of women in Western society. As women have become more accepted in previously male-dominated occupations, their frame of reference has become more similar to that of men. Another way to express this nondifferentiation between the genders is to postulate that the socialization which men and women have in common outweighs gender-related differences in the case of environmental attitudes. Positions as contributors and consumers in modern society, or as part of our Western culture, could be a more important influence on environmental attitudes than other differences in socialization and experience between men and women.

NEP and Age

Acceptance of the *NEP* among generational age groups was significantly higher for those under the age of forty than for those over that age. This supports Buttell and Flinn's notion that "proenvironmentalism dovetails with the historically low commitment of youth to the dominant societal value system during the past decade" [24]. As shown in Table 4, the difference between the age groups was significant for the *NEP*scale but not the *NEP**scale.

Table 5. *T*-tests for Individual Questions on Community

	<i>Mean Score</i>		<i>t-Test</i>
	< 40 Years	> 40 Years	
Equality	5.3	4.2	-2.0*
Equality	4.5	4.7	.4
Non-hierarchy	2.0	1.6	-2.0*
Cooperation	2.9	1.8	-2.9+

* $p < .05$ + $p < .01$

Questions were coded on a basis of 1-7. Scores over 4 indicate support for equality, non-hierarchical society, and cooperation rather than acceptance of inequality, hierarchy, and competition.

Those over forty, then, hold similar NEP values to their younger counterparts except where social structure is concerned. The general environmental values are embraced by young and old alike, but the degree to which they accept values that have traditionally ordered community relationships varies. Table 5 documents the relationship between generational ages on the individual questions referred to as the "traditional community" questions in the NEP scale.

In three out of four questions, those in the younger group significantly differed from those in the older group. In the fourth question, which asks to what degree the respondent agrees that "to have an effective community, there must be some leaders and some workers; everyone is not suited to undertake the same tasks," the groups were very similar in their responses. Most notable is the highly significant question concerning competition. Those over the age of forty more strongly agreed that "some competition among members of a community is good because it ensures that everyone will contribute to their fullest potential."

Of note is the observation that those under forty do not reject the values of their elders; rather, they exhibit less conviction than their elders to values that order their lives. This degree of acceptance might cause some to attribute differences to the aging process. In this view, the young in a society are not yet fully integrated into the dominant social order, and thus do not accept as strongly the values of their elders. However, they develop more traditional values as they age [23]. The lack of significant finding in age as measured by correlation, however, casts a shadow on the validity of the aging process as an explanation. Instead, this finding could reflect cohort differences in attitudes between generations. Younger people are more accepting of the concepts embraced by radical environmentalists, while older people prefer the ideas of traditional environmentalists.

RESULTS AND DISCUSSION: COMPONENTS OF THE NEP

When examining the elements of the paradigms and the change in beliefs necessary to shift from one to another, it seems that some ideas in the NEP would be more readily accepted than others. This was illustrated in the study conducted by Cotgrove which considered many aspects of the attitudes here discussed [3]. A group of 577 people from three English towns in 1979 comprised the general sample in the study. Cotgrove's questionnaire included several scales, one of which measured attitudes for and against science. Also included in Cotgrove's questionnaire was an environmental concern scale, with a subscale dealing with concern about nature. Table 6 is derived from the results of Cotgrove's study in Great Britain.

This table clearly shows the differing levels of acceptance of subscales of NEP values. It was easier for the general population to recognize, for example, that "there is too much destruction of natural habitats" than to deny that "science and technology can solve our problems by finding new sources of energy and materials, and ways of increasing food production."

Average responses to various subscales of the NEP in our study were most supportive in terms of recognition of humans as part of the balance of nature. Least accepted among our sample population were those attitudes contained in the anti-science subscale. Thus, while 82 percent of the population disagreed or strongly disagreed with the statement that "humans need not adapt to their natural environment because they can remake it to suit their needs," only 24 percent of the group agreed or strongly agreed that "the bad effects of technology outweigh its advantages." Between these two extremes fell the belief in controlling growth. Of the population, 42 percent agreed or strongly agreed that "to maintain a healthy society, we will have to develop a 'steady-state' economy where industrial growth is controlled." Table 7 compares the average scores on each of the three subscales.

Table 6. Results for Concern about Nature
and Anti-science Subscales

	<i>Concern About Nature (Percent)</i>	<i>Anti-Science (Percent)</i>
Low score	4	68
Medium score	30	29
High score	66	3

Source: Cotgrove [3].

Table 7. Average Scores on NEP/NEP* Scales and Subscales

	<i>Mean Score</i>	<i>Number of Items</i>	<i>Average</i>
NEPscale	102.0	24	4.3
NEP*scale	88.0	20	4.4
Balance of Nature Subscale	15.7	3	5.2
Anti-science Subscale	19.4	5	3.9
Control of Growth Subscale	4.6	1	4.6

Questions were coded on a basis of 1-7. Scores over 4 indicate support for NEP/NEP* scales and subscales.

The difference between the balance of nature subscale and the control of growth subscale can be compared directly to previous research. The three questions in our balance of nature subscale and the question comprising the control of growth subscale are taken from Dunlap and Van Liere's NEP scale [4]. Responses of 806 residents in Washington State surveyed in 1976 were fairly consistent with the findings here. Generally, responses to all questions in both surveys showed good support for the balance of nature and control of growth components of the NEP. In this survey of northern New York residents, average responses on all three balance of nature questions were higher than the average support for the idea that economic growth should be controlled. In the Washington study, the control of growth question averaged higher than two of the balance of nature questions. Thus, both groups supported both the place of humans in nature and the control of economic growth, but Dunlap and Van Liere's sample in Washington State showed even greater support for a steady state economy than our sample in northern New York.

CONCLUSION

This research has demonstrated that residents of northern New York have slightly accepted the tenets of a new environmental paradigm. Acceptance was not related to the major demographic variables of gender, income, and education. However, those under the age of forty were more supportive of the NEP than those over forty when the NEP was defined from the perspective of radical environmentalists, who favor a reorganizing of social structure and community.

Results of studies by Dunlap and Van Liere [4], Albrecht, *et al.* [29], and Cotgrove [3], as well as this study, confirm the hypothesis that certain aspects of the NEP are accepted more strongly than others among the Western population. Most accepted in this research was the notion that humans are part of the balance of nature. Two explanations can be offered in light of this evidence.

The first accepts the paradigm theory and the NEP defined in current literature. In this context, the differing acceptance of subsets of beliefs within the NEP reflect the development of the NEP into a new dominant paradigm; certain aspects of the NEP have been better accepted because the evidence that refutes their DSP counterpart is highly visible. Human actions which have damaged the ecosystem and increasing participation in recreation out-of-doors have led to strong recognition of the principle of the balance of nature. Because of the coexisting evidence of good and bad aspects of technology, on the other hand, people can still justify confidence in science and technology. In addition, conceptualizing humans as part of nature is less threatening to the Western way of life than controlling economic growth or recognizing limits to science and technology. Thus, one NEP concept is more easily accepted than others.

The second explanation is to refute the NEP as a constellation of related and coherent values. Perhaps attitudes opposing science and technology will not become dominant, even though some environmentalists espouse it in conjunction with NEP values more accepted among the general public. In fact, science and technology, in various forms, have been embraced by some environmentalists as integral to the future. The use of high technology in environmental management, such as remote sensing for land-use and disaster planning, is one example. Probably a belief in science more generally accepted by environmentalists is appropriate technology. Schumacher speaks of "technology with a human face" [16]. A group called the New Alchemy Institute promotes biotechnology which is based on ecological rather than economic efficiency considerations and does not require a great deal of financial support in its construction or maintenance. These principles are manifested in the development of aqua-farming and alternate sources of energy such as low-head hydroelectric, solar, and wind [30]. The use of appropriate technology is consistent with other NEP values, especially the focus on small, decentralized communities.

If, indeed, we are in the midst of a paradigmatic shift, only time will tell which of these explanations holds true. The course of future scientific advances or technologically produced alienation and disasters will play a large part in determining whether the NEP is fully accepted or whether the NEP will be redefined.

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Direct reprint requests to:

Carolyn Abbott
Environmental Studies Program
St. Lawrence University
Canton, NY 13617