

## 14. Industrialization and Concern for the Environment

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### *Abstract*

*Concern for the environment has been treated as a key value of the new value orientation that Inglehart has named postmaterialism. The emergence of this new value orientation has been explained by Inglehart as a consequence of the historically unique situation that has prevailed in advanced industrial societies since the end of the II World War, characterized by increasing proportions of their populations that enjoy economic and personal security to a degree never experienced before. Furthermore, Inglehart argues through two main hypotheses (scarcity and socialization hypotheses), that the degree of postmaterialism in each society will vary directly with its degree of economic development, and that within each society postmaterialism will be negatively correlated with age and positively correlated with socioeconomic status.*

*This paper suggests another theoretical framework that is not contradictory with, but rather complementary to, the framework of postmaterialism. In fact, and departing from the ecosystem theoretical framework developed by Hawley and Duncan, it argues that value systems are collective responses to new circumstances that derive from the interaction between populations and their environments. A specific value system that praised effort, achievement and like personal traits seems to have been in the origin and development of industrialization, but as industrialization has successfully expanded throughout the world, it has created environmental problematic situations, even real threats to the survival of humanity. This new situation may explain the change in value orientations towards one that gives greater priority to protecting the environment than to economic development. Societies that have experienced industrialization earlier are therefore more likely to foresee the new threats to humanity and consequently will adopt earlier the new value orientation. Social groups, within each society, that are more aware of the non desired effects of industrialization will also change their value orientation earlier than those not so aware of the new problems. Galtung's center-periphery theory is claimed in this paper to be useful in explaining the degree of postmaterialism that is found in different social groups, from a high degree of internalization of the new value orientation in the "social center" to a very low degree in the "social periphery". ISSP data from the 1993 module on Environment in 17 societies with very different degrees of economic development and different political and cultural systems are used to test some hypotheses.*

## 1. From Successful Economic Growth to Fears of Eco-spasm

It is a well known fact that public concern for the environment, on a world wide scale, was first noticed at the end of the '60s and the beginning of the '70s, when committees on environment were established at UNESCO, the Council of Europe, the OECD, the UN Economic Commission for Europe, and many other international organizations. At that time, many national governments established, for the first time, ministerial departments or equivalent bodies, inter-ministerial committees or specialized agencies, to deal with policies concerning the environment, and non-governmental associations and even political parties flourished everywhere to express their concern with environmental problems on a global (world-wide), regional, national or local scale. The first UN sponsored world conference on the environment was held in Stockholm in 1971, and Meadows' report on *The Limits to Growth* for the Club of Rome was published in 1972 (Meadows et al., 1972), the first significant appeal to public opinion to take conscience of some real threats to our planet earth and to the survival of the human species. The first "oil crisis", in 1973, confirmed some of the fears expressed on Meadows' report and in many other published reports which have followed since then, including several other Club of Rome reports, the *Global Report 2000*, OECD's *Interfutures*, some UN reports on the *Social Situation of the World*, the Brundtland report, Toffler's *Ecospasm* and the most recent *Program 21* which came out of the UN sponsored conference in Rio do Janeiro in 1991 (King and Schneider, 1991; Council on Environmental Quality and Department of State, 1980; OECD, 1980; United Nations, 1975; United Nations, 1987; Toffler, 1975; United Nations, 1992).

The question that seems to emerge is, why the *achievement syndrome* and the *concern for economic growth* that characterized the decade of the '60s in the industrialized or the industrializing world began to be replaced by a growing *concern about the natural environment* and the quality of life since the '70s? Several answers have been advanced in recent years, but one that has gained great attention from social scientists has indeed been the theory that refers to the observed trend, in advanced industrial societies, towards substituting traditional *materialist* values by a new set of *postmaterialist* values, which was first introduced by Inglehart about twenty years ago (Inglehart, 1977).

According to Inglehart's theoretical framework, the cohorts born after World War II in advanced industrial societies have enjoyed, for the first time in the history of mankind, a situation in which the great majority of the population has achieved *personal security* and *economic security* to a very large extent. The absence of wars, at least large scale wars, and the extension of economic prosperity to large proportions of the populations, as manifested by the growth of middle classes and mass consumption, would have influenced the socialization processes of post-war cohorts, so that, being raised on war-free and economically

affluent social environments, taking for granted their material welfare, their aims and aspirations would turn towards non-material (i.e., postmaterialistic) goals, like protection of the environment, greater political and social participation, increased interest on social relations, greater interest on esthetics, a new sense of spirituality, etc.

On the basis of large amounts of data, first from advanced industrialized societies, and then from societies at different levels of economic development, and with very different political and cultural systems, the main hypotheses elaborated by Inglehart seem to have resisted the test of verification. Evidence from almost any society seems to corroborate the process of change from materialist to postmaterialist values, though at different levels and rhythms (Inglehart, 1990). Age seems to be, everywhere, the most important variable explaining this process of change, in the sense that it is inversely related to postmaterialism (i.e., younger cohorts are more postmaterialistic, while older cohorts are more materialistically oriented). On the other hand, Inglehart has found that societies, and social groups within each society, that have attained economic security earlier (i.e., greater economic development or prosperity) are more postmaterialistically oriented than those which are at lower levels of economic security. In more recent writings, Inglehart has argued that the change in values from materialism to postmaterialism is only part of a more extensive cultural change from modernization to postmodernization, defined by two dimensions, one axis being the change from materialist to postmaterialist values, and the other axis being the change from traditional to rational authority (Inglehart, 1997).

However, it does not seem clear why concern for environment has become such a central issue on the new *postmaterialist* set of social values. It cannot be taken for granted that material welfare provided by advanced industrial societies will lead, necessarily, to concern about the environment. It might as well lead to other *spiritual* and *idealistic* concerns without implying the natural environment at the world-global level. Besides, it is not clear either why and how the new set of *postmaterialist* values is transmitted from the more advanced industrial societies to societies which are at lower levels of industrialization and economic development, or from the economically more affluent social groups in society to the more deprived ones.

Having found very strong evidence to support Inglehart's hypotheses on the basis of large amounts of data on Spain, I have also tried to find complementary theoretical explanations to the above formulated questions (Díez-Nicolás, 1993; Díez-Nicolás, 1995; Díez-Nicolás, 1996). In the pages that follow I will argue that *social ecosystem* theory and *center-periphery* theory provide sound theoretical interpretations to complement the proposed explanation of cultural change provided by *postmaterialism* theory. If the latter provides enough

evidence to support a tentative explanation of *what* values have changed and *how much* change there is in different societies, and how this cultural change is related to political and economic systems, the former may provide acceptable interpretations of *why* change originated in the more industrialized societies, of why this change implied and even required such an emphasis on the protection of the natural environment, and of how the change in values spreads throughout society, both among societies and within each society.

First, according to *social ecosystem* theory, as formulated by Hawley and Duncan among others (Hawley, 1986; Duncan, 1964; Duncan and Schnore, 1959; Díez-Nicolás, 1982), value systems and social attitudes constitute cultural collective responses given by human societies to specific conditions (constraints and facilities) found in the environment, and therefore they intend to be adaptive responses to those conditions. Human populations try to adapt to their environment through culture, and that is what distinguishes clearly human populations from all other biotic populations (plant and animal). For analytical purposes we may differentiate between material culture (technology) and non-material culture (social organizations, including belief and value systems). Value systems, like all elements of culture, are instrumental, as they help to attain the best possible adaptation given a specific situation (i.e., a population of a particular volume and characteristics, a natural-physical environment where sustenance resources can be found, a specific level of technological development, and a variety of family, economic, political and social organizational structures). It may be argued that advanced industrial societies have achieved a high level of material welfare due to the application of increasingly complex technology and social and economic organizations. But, the application of increasingly complex technologies and social and economic organizations, as well as its dissemination to less developed societies, have created serious environmental problems all over the planet. Then, it may be argued that "success" in industrialization has led to undesired consequences, that is, real threats to the natural environment and therefore to the survival of humanity on this planet. Postmaterialist values would be a collective response to objective changes in the environment which have resulted from the expansion of industrialization processes in most societies, increasing the material welfare of societies but also creating serious threats of possibly irreversible environmental deterioration. This collective response has manifested itself in all of the reports mentioned previously, and can be summarized as follows: rapid population growth as the world has experienced since the end of World War II will imply an increasingly greater pressure on the earth's resources (both renewable and non-renewable), and that may lead to a deterioration of the quality of life everywhere, which on its turn may increase economic inequalities among societies and within each society, which would in turn lead to increasing social conflicts (latent or manifest) among societies and within each society, which would make it more likely to recur to authoritarian

political systems (rightist or leftist) to solve conflicts (Díez-Nicolás, 1980). The change of values, and the specific role of present concern for the environment which is evident in the emerging set of postmaterialist values, may then be explained by objective changes in other elements of the ecosystem, and very specifically by the real threats on the environment and to the survival of humanity derived from a *too* successful industrialization process which paradoxically pretended to improve living conditions for humanity all over the planet.

Second, according to *center-periphery* theory (Galtung, 1964; Galtung, 1976), new social attitudes (and eventually social values) are transmitted from the *social center* to the *social periphery*, regardless of where they may have been originated, since it is the social center the first one to acquire the knowledge about new facts, and the one that develops new values, attitudes and opinions and has the power to communicate them to others in larger numbers and faster, given their greater control and expertise on new technologies (particularly those related to communication). In every society, as Galtung expressed in an early formulation of this theory, there are social positions that are more rewarded, while others are less rewarded or even rejected. The *social center* makes reference to the more socially rewarded positions (in terms of wealth, prestige and power), while the *social periphery* refers to the less socially rewarded positions, but the two concepts are the poles of a continuum where intermediate positions can be defined. *Center* and *periphery* differ in many structural aspects: 1) the center shows a high degree of social participation, manifested through secondary (i.e., membership in associations) or tertiary (mass media) communication, while the periphery shows a low degree of social participation, manifested primarily through primary communication (i.e., interpersonal conversation); 2) the center shows a high degree of knowledge, particularly about policies, while the periphery shows a low degree of knowledge, and not about policies; 3) the center has more opinions, particularly about policies, while the periphery has very few opinions. Since evaluation of any social object requires previous knowledge of that object, and since the center has access to mass media and has something to communicate (i.e., cognitions, evaluations, opinions, attitudes, values), it seems natural that communication will mainly proceed from the center (initiator) to the periphery (receiver). *Center* and *periphery* differ in many other important respects, as with respect to their mode of orientation (differential evaluation in the center, global evaluation in the periphery), the consistency among attitudes, between attitudes and behaviour, and stability in time (high in the center and low in the periphery), the internalization of new policies (before their institutionalization in the center, after institutionalization in the periphery), the perspective about change (gradualist, reformist in the center, absolutist in the periphery), the style of thinking (inductive, pragmatic, means oriented in the center, deductive, moralist, ends oriented in the periphery), their attitudes toward the existing social order (partial acceptance or rejection,

revisionism in the center, total acceptance or rejection, defense of the *status quo* or revolution in the periphery), the content of reactions towards decision-makers (discussion in the center, protest or apathy in the periphery), or the form of those reactions (through organizations or mass media in the center, through public demonstrations or non-action in the periphery) (Galtung, 1964; Díez-Nicolás, 1966).

Many of these hypotheses have been successfully tested empirically since they were first formulated (Díez-Nicolás, 1968; Galtung, 1976; van der Veer, 1976), but for the purposes of this research they seem to provide a coherent tentative explanation as to why the more economically developed societies and the social groups which have attained higher degrees of prosperity are the ones that seem to have internalized more extensively the new postmaterialistic values. Achievement values were on the origins of industrialization and economic development, and they were also part of the value system that accounted for the change from traditional authority to rational authority (Inglehart, 1997), but successful industrialization and economic development all over the world also resulted in extensive and intensive damages to the world environment, some of which may be irreversible or at least have long time effects. Advanced industrialized societies (the international social center, for that respect) and the social center in each of those societies were the first to be aware of the damages of industrialization to the environment, and that would explain the gradients of postmaterialistic orientations that have been reported when comparing societies at different levels of development or different socioeconomic strata within particular societies (Díez-Nicolás and Inglehart, 1993).

The social center, however, should not be identified with the higher socioeconomic strata, as wealth is only one (though very important) of the several social rewards of any social position. That is why the index of social position (which defines a center-periphery continuum) has demonstrated to be a better predictor of postmaterialism than the usual socioeconomic status index. The social center, on the other hand, is not (and probably cannot be) ideologically homogeneous, and that is why social position seems to be a better predictor of postmaterialism than of ideology (Díez-Nicolás, 1996). The explanatory and predictive power of social position (as a measurement of center-periphery in society) on postmaterialism has been repeatedly reported for a particular country, Spain, though some exploratory attempts have also been made to replicate some findings through international comparisons. It is the main purpose of this research to use comparable data from a wide variety of countries to test the validity and reliability of center-periphery theory, as operationalized through the social position index, to provide a meaningful explanation of the present concern about the natural environment and, in general, of the future of humanity and of our planet.

## 2. Social Position and Postmaterialism

The data that have been used in the present analysis come from the ISSP module on Attitudes towards the Environment, conducted in 1993 in 20 countries (actually 22, since there are separate files for West and East Germany, and for Ireland and Northern Ireland) which show a great variety of social, political and economic systems (ZA, 1995; Frizzell and Pammett, 1997; Gendall, Smith and Russell, 1995; Rasinski, Smith and Zuckerbraun, 1994; Skjaak, 1996; Skrentny, 1993; Thomas, 1995). Two main indicators have been constructed, one to measure orientation towards postmaterialistic values and the other to measure social position, in order to test some of the hypotheses discussed earlier.

To measure postmaterialistic value orientation the four items scale designed by Inglehart, which was part of the module, was used. Though the twelve items scale provides a more refined distribution, the four items scale has been found to be highly correlated with the eight items scale, and therefore provides a good measurement. Respondents were asked to specify which of four different goals should be R's country's highest priority (maintain order in the nation, give people more say in government decisions, fight rising prices or protect freedom of speech), and which should be R's country's second highest priority. The first and third items are taken as indicators of materialistic values, while the second and fourth are taken as indicators of postmaterialistic values. Each respondent could select two postmaterialistic items, one item or no item at all. As the literature on this matter has demonstrated, different researchers have used the scale differently in order to construct a summary index for population aggregates (i.e., the proportion of respondents who have selected the two postmaterialistic items, the proportion who have selected no postmaterialistic items at all, the difference between the two proportions, etc.) (Inglehart, 1977). For the purposes of this analysis it was decided to take the proportion who selected the two postmaterialistic items for aggregate analysis, though the three point scale was used for individual analysis.

The construction of the social position index was much more difficult, as is usually the case in international comparative research, due to difficulties in securing reliable and comparable data on several socioeconomic and demographic characteristics. As originally defined (Galtung, 1964), the social position index is constructed on the basis of eight dichotomized standard characteristics of respondents: sex, age, educational level, household income, occupation, economic sector, habitat and accessibility. It is assumed that, other things being equal, it is socially more rewarded to be a male than a female (the assertion not implying at all that this should be desirable), it is socially more rewarded to be an adult than to be a youngster or an old person, it is socially more rewarded to have a higher than a lower level of education, and a higher rather than a lower income, it is socially more rewarded to be a "white-collar" than a

"blue-collar" worker, and to work for the service or the manufacturing sector than for the extractive sector of the economy, it is socially more rewarded to live in a metropolitan or urban place than in a rural area, and to live in a more dynamic, accessible and migrant-receiving community than in a static migrant-sending community. There was no information on the last variable for any country, since that variable was not included on the module. And there were some problems to operationalize the remaining seven variables, since some countries did not report on all of them, for which reason Czech Republic, Israel, Northern Ireland, Philippines and the United Kingdom could not be included in this analysis, which was finally based on 17 societies.

To dichotomize sex and age was no problem in any country. Adults were taken as those between 30 and 64 years of age. Education was measured through number of years of school completed, taking less than 10 years, and 10 years and over, as the basis for dichotomization (only one country did not report on that variable, but a substitute variable on educational level completed was used in its place). To measure household (not R's) income the continuous variable was used when it was reported, but for some countries the income categories variable had to be used instead. The dividing value for each country was arbitrarily decided so that the sample would be cut into two more or less similar halves. Since the measurement of occupation only required "white-collar" vs. "blue-collar", and "primary" vs. "secondary and tertiary" sectors of the economy, it was fairly simple to recode whichever occupational categories were used by the different countries. However, as some countries provided information on the last (not the present) occupation of respondents, it was necessary to use the question for current employment status as a filter, so that all respondents not currently employed were classified in the category of less socially rewarded positions. As for habitat, most countries included a variable with three categories: metropolitan-urban, suburbs of a city, and rural. The first two were taken together vs. the rural category, and for those countries which did not include this variable, the size categories based on the number of inhabitants (taking 10,000 inhabitants, where possible, as the dividing line) was used.

The proportion of the population in each country that qualified for the "more socially rewarded" positions in each one of the seven variables varied greatly, in spite of the very crude measurement (dichotomization) which was used. In some cases this variation probably reflects real differences among countries, but in other cases it might reflect the fact that samples do not represent accurately the characteristics of the population. Thus, there seems to be some over representation of males in Australia (the only country which shows a greater proportion of males than of females). There seems to be under representation of the age group 18 to 29 years in Australia, and over-representation of that age group in Italy, Norway, Russia and Canada. On the contrary, there seems to be



over-representation of the group 65 years and over in Australia and Bulgaria, but under-representation of that age group in Italy, Netherlands, Norway, Russia, Canada and Japan.

There are some other data which deserve some comments, inasmuch as they seem to deviate greatly from the general pattern. Spain and Ireland are the only two countries in which less than 50% of the sample reports less than 10 years of school. Norway is the only country where less than 50% of the sample (actually only 34%) reports living in rural places. With respect to household income, although it was intended to arbitrarily divide each sample into two more or less equal halves, exceptions had to be made with East Germany and Russia. In the first case, because the same dividing income category was used for both parts of Germany, which resulted in a 51-49 per cent partition of West Germany's sample, but in a 29-71 per cent partition for East Germany. In the case of Russia, in view of the income scale distribution it was necessary to adopt a 37-63 per cent partition. The very low proportion of the Spanish sample who are currently employed (35.5%) is not due to lack of representativeness of the sample, but on the contrary it seems to be in agreement with census and other official statistical data, and reflects the high rate of unemployment, the low rate of women participation in the labor force, as well as the high proportion of young adults who extend their education until fairly late ages because they continue to be supported by their parents (almost 80% of Spaniards 18 to 29 years live with their parents).

In any case, the value of the Social Position index is more explanatory than descriptive, and to this purpose the sample of each country, though distributed on a seven point scale that, in most cases, provides a bell-shaped distribution, has been aggregated into three categories (low, middle and high) that roughly represent the three broad categories of the center-periphery continuum (social periphery, middle and social center) in each country's sample (Table 1). However, these categories should not be compared to describe real differences in social position distributions among the countries under study. Similarly, as postmaterialism has been repeatedly related to several socio-demographic characteristics, if samples are not completely representative of their countries' populations, the resulting proportions of respondents labeled as postmaterialists in each sample might not be accurate either, and therefore might not be completely comparable. However, it must be underlined that ISSP shows a higher degree of comparability in sampling methodology among participant countries than other similar international comparative projects, for which reason, though countries' distributions on the two indexes are not completely accurate for descriptive comparisons, they are nevertheless quite acceptable to disclose rough differences among them which can be accepted as close approximations to real differences. And, needless to say, the validity and reliability of both indexes as

analytical tools to measure the two variables for explanatory purposes seem to be well established.

To test the reliability of some of the macro-level variables derived from survey data for each country, including the proportion of respondents who have been labeled as postmaterialists (i.e., those who selected the two postmaterialistic items as first and second priorities), some correlations with other country variables obtained from international statistical sources (Council of Europe, 1993; United Nations, 1996a; United Nations, 1996b) have been calculated. Thus, the correlations between *per capita* Gross Internal Product, adjusted *per capita* GIP and *per capita* Gross National Product with postmaterialism (as defined above) are positive and very high (.80, .74 and .75 respectively), and they confirm the relations found in other studies. Postmaterialism also seems to be positively and highly correlated with the UN Index of Human Development (.81) and positively but moderately correlated with total student enrolment rate (.47). Besides, the correlation between the proportion of respondents currently employed in each sample with the officially reported unemployment rate is negative and moderately high (-.66), and the correlation between the proportion who report having completed 10 years of schooling or more in each sample with the official total student enrolment rate is also positive and moderately high (.53). All relations seem to be moderately strong and in the expected direction, something that indirectly also seems to confirm the validity and reliability of the two indexes.

At the individual level, postmaterialism is significantly and negatively correlated with age in most countries, with the exceptions of the US, Norway, New Zealand and Canada, where it is negative but not significant. One possible explanation for the weaker relations found in these four countries might be that, because of their higher and earlier economic development, individuals of very different age groups do not differ significantly on their degree of postmaterialism. On the contrary, in countries that have experienced important changes on their degree of economic development in only a few decades, one would expect greater differences in value orientation between older and younger cohorts, and therefore stronger relations between postmaterialism and age. Education also shows a strong and significant positive relation with postmaterialism in all but three countries (Russia, New Zealand and Canada), a finding that confirms also what has been repeatedly reported in the literature. The explanation for the weaker relation found in New Zealand and Canada would be similar to the one already proposed before with respect to age, given the strong negative relation found in most countries between education and age. The case of Russia is probably explained by the very low proportion of postmaterialists (only .9 per cent) in the sample.

But the most important finding is the strong and positive significant correlation found in all countries, except Canada and Russia, between social

position (seven point scale) and postmaterialism (three point scale) (Table 2). On the basis of center-periphery theory, this relation can be interpreted as meaning that those individuals who are more informed and have more opinions, those who tend to transmit their values, attitudes and opinions to the rest of society, in fact those who constitute the *social center* and therefore can be considered as "opinion leaders", are relatively speaking more oriented towards the new postmaterialistic values than those individuals who are less informed and have less opinions, those who constitute the *social periphery*, who seem to be more oriented towards traditional materialistic values. It could be argued, though cross-sectional data do not allow to verify this assertion, that there is a sequential process by which the social center is the first segment of society that, having acknowledged the negative impact of world industrialization on the global environment, has reacted by substituting the old materialistic value orientation that emphasized the need to achieve economic growth by a new set of values that emphasize the quality of life and protection of the global environment, among other postmaterialistic values, and has subsequently transmitted the new values to the rest of society, in such a way that change may be observed to have occurred gradually from the social center to the social periphery. Time series data for Spain seem to support that hypothesis (Díez-Nicolás, 1995).

It must be underlined that the relation between social position and postmaterialism, in this comparative perspective, is not significantly different from the well established relations between age and education with postmaterialism, in spite of the difficulties to construct comparable measures of social position in so different societies as the ones included in this research, and in spite of the methodological simplicity and crudeness of the social position index itself. As the data seem to demonstrate, Russia, New Zealand and Canada are the only three countries, out of seventeen, where most of the relations between age, education and social position with postmaterialism seem to be either weaker or even in the opposite direction to that which was expected. In addition, the relation between age and postmaterialism seems to be not significant (though in the expected direction) in the United States and Norway, but the other two relations are significant and in the expected direction in both countries. All three relations are significant and in the expected direction in the other twelve countries.

The evidence presented here seems to support the findings from previous research in showing the negative relation between age and postmaterialism, as well as the positive relation between education and postmaterialism (Inglehart, 1990; Díez-Nicolás, 1993). Besides, it seems to support the theoretical argument derived from center-periphery theory to explain why there should be a strong positive relation between social position and postmaterialism, and in so doing it has also provided some support to the analytical validity and reliability of the

social position index, which seems to describe a plausible distribution of respondents in most countries, in spite of the difficulties which have been reported before with respect to making the variables comparable across countries.

### **3. Knowledge, Attitudes and Behaviour about the Environment**

Having confirmed the high correlation between postmaterialism and social position at the individual level, the next step of this research has been to find out whether or not these two variables are related to knowledge, attitudes and behaviour concerning the environment. On the basis of Inglehart's theory of value change one should expect to find a positive relation between postmaterialism and knowledge, attitudes and behaviour about the environment, to the point that the relation might even be considered somewhat tautological. On the basis of center-periphery theory, one should expect the individuals in the social center to have more knowledge about the environment, to be more concerned about the environment than about economic growth, and to exhibit more consistency between attitudes and behaviour in preserving and protecting the environment.

The evidence presented in Table 3 basically supports the expected positive correlation between postmaterialism and social position with knowledge about the environment, though some comments seem necessary. Two statements intended to measure knowledge about the environment, both based on a four point scale (i.e., definitely true, probably true, probably not true and definitely not true) were selected for that purpose. It was found that postmaterialists and individuals who belong to the social center seem to accept as true, in greater proportion than they reject as false, that "the greenhouse effect is a result of a hole in the earth's atmosphere", and they seem to reject as not being true, in greater proportions than they accept as true, that "all pesticides and chemicals used on food crops cause cancer in humane". However, postmaterialists seem to know better about the greenhouse effect than about the consequences of pesticides and chemical on cancer, as the correlation coefficients are significant for most countries with respect to the first issue (with the exceptions of Russia, New Zealand and Canada), but only for eight countries with respect to the second. Social position seems to be a slightly better predictor of knowledge about the environment, as the correlation coefficients are significant in ten countries with respect to the greenhouse effect, and they are significant in all seventeen countries with respect to the consequences of pesticides and chemicals on cancer. It must be underlined that the proportion of respondents who did not give an answer to the "greenhouse effect" was over 25% in five countries (Hungary, Slovenia, Bulgaria, Russia and Japan), but it was under that proportion in all countries with respect to the question on pesticides and chemicals causing cancer (It must be clarified, however, that the statement about the greenhouse effect is

false as it was phrased, but given the fact that the majority of R's in most countries accepted it as true may be taken as meaning that, due to wrong information through mass media, a scientific error is transformed into a social truth. In any case, this item is certainly problematic and probably was not well phrased).

Social position also seems to explain general attitudes towards economic growth and protection of the environment better than postmaterialism, though different researchers might have different arguments here to explain the findings. Respondents were asked to express their agreement or disagreement with two statements on a five point scale (i.e., strongly agree, agree, neither agree nor disagree, disagree and strongly disagree). The two statements were the following: "In order to protect the environment [R's country] needs economic growth", and "Economic growth always harms the environment". It seems very likely that even experts might differ among themselves with respect to the answer they should give to each of the two statements. However, there seems to be a general consensus among respondents in most countries to agree that economic growth is needed to protect the environment (more than 40% agree with the statement in each country except in Austria, Netherlands and New Zealand, though only in the last two countries those who disagree outnumber those who agree). But there seems to be more controversy over the assertion that economic growth *always* harms the environment, as more than 40% agree with it in West and East Germany, Hungary, Italy, Slovenia, Poland, Bulgaria, Russia, Japan and Spain, while more than 40% disagree with it in Austria, USA, Ireland, Netherlands, Norway, New Zealand and Canada. Nevertheless, postmaterialism and social position seem to be negatively related to both statements in most countries (meaning that postmaterialists and those in the social center tend to disagree with them), though there are a few exceptions where the relation is positive (tendency to agree). Besides, the correlation coefficients with social position are, in general, stronger and more significant than with postmaterialism, which is a very interesting finding (Table 4).

In general, one would have expected to find a strong and negative relation of postmaterialism with the first statement (economic growth is needed to protect the environment), and a strong and positive relation with the second (economic growth always harms the environment). But, though most coefficients are negative with respect to the first statement, they are significant only in seven countries. And, with respect to the second statement, the coefficients are negative in ten countries but positive in seven, and they are significant only in four of them (three positive and one negative). On the other hand, and given the "differential evaluation" mode of orientation that has been said to characterize the social center, one would expect that segment of the population to be less in agreement with either statement, due to their more "global evaluation" implications. In fact,

it would be difficult for the social center, being more knowledgeable and discriminative in its judgements, to agree that economic growth *is needed* to protect the environment or that economic growth *always harms* the environment. Therefore, it would be expected that social position would be negatively related to both statements, thus showing more disagreement than agreement with them on account of their over-generalization. The results broadly confirm the expected negative relations with the two statements (only four exceptions in the first case and one in the second), the majority of which are significant (nine and fourteen, out of seventeen, respectively).

Postmaterialism and social position seem to be strongly and positively related to predispositions to act on behalf of the environment (Table 5), as shown by two indicators which measure, on a five point scale, the willingness of respondents to pay much higher prices, or to accept cuts in their own standard of living, in order to protect the environment. As Spaniards say, "to talk is free", meaning that it is always easier to say "one will do something" than to really do it. It is no surprise, therefore, that more than 40% of respondents in most countries say they would be willing to pay higher prices to protect the environment (though the opposite is true in East Germany and Bulgaria), and that more than 40% of respondents in most countries also say that they would be willing to cut their standard of living to protect the environment (with the exceptions of the US, Hungary, Ireland, Poland, Bulgaria and Russia, countries where more than 40% will say they are unwilling to sacrifice their standard of living). Though almost all correlation coefficients are positive and significant (with only very minor exceptions), it seems that postmaterialism would in this case be a slightly better predictor than social position.

Reported behaviour on behalf of the environment is still very rare in most countries, according to answers given by respondents to two questions about how frequently they make an effort to sort glass, tins, plastic, newspapers and so on for recycling, and how frequently they buy fruits and vegetables grown without pesticides or chemicals. More than 25% of respondents in Hungary, Ireland and Poland, and more than 40% in Slovenia, Bulgaria and Russia, do not give an answer to the first question (partially because there is no recycling of the above mentioned residues), and between 30% and 50% of respondents in Hungary, Bulgaria and Russia do not answer the second question (mainly because they say that it is not possible to buy fruits or vegetables grown without pesticides or chemicals in their countries, though in Hungary 21% of respondents answer that they never buy vegetables). In addition, countries are more or less evenly splitted with respect to whether or not the majority of their population sorts residues, so that while more than 40% of respondents answer they do it always or often in Australia, West and East Germany, USA, Italy, Netherlands, New Zealand, Canada and Japan, more than 40% answer they do it sometimes or

never in Hungary, Ireland, Norway, Bulgaria, Russia and Spain. However, there is greater *consensus* among respondents with respect to habits in buying fruits and vegetables. More than 40% of respondents in all countries, except West Germany (more than two thirds in most countries) answer that they never, or only sometimes, buy fruits and vegetables grown without pesticides or chemicals (Table 6). Apparently, only more than half West Germans answer that they always or often buy fruits and vegetables that meet the above mentioned requirements.

The lack of facilities to sort residues or to buy fruits and vegetables grown without pesticides or chemicals, in some cases, and the lack of habits to behave in ways that do not damage the environment, in others, probably explain the lack of clear and strong relations between postmaterialism or social position on the one hand and behaviours on behalf of the environment on the other. Nevertheless, postmaterialism tends to be positively related with patterns of behaviour which one might denominate "environmentalist", though only in about one third of the countries the correlations are significant (West Germany, Slovenia, Poland and Bulgaria, with respect to both patterns of behaviour, United States and Ireland with respect to sorting residues, and Italy with respect to fruits and vegetables). But the relation of social position with the two patterns of behaviour seems as likely to be positive as it is to be negative, though the number of significant correlations is greater and mainly positive. This seems to imply that, although the data are not very conclusive, probably due to the fact that "environmentalist" behaviour is still very rare in most societies, postmaterialists and those in center positions in society tend to make more efforts to sort residues, and to buy fruits and vegetables grown without pesticides or chemicals, than individuals who are more oriented towards materialist values or are in more peripheral positions in society.

Evidence is also presented to demonstrate that, with almost no significant exceptions, membership in "environmentalist" associations or groups is positively and very clearly related with postmaterialism and with social position (Table 7), that the likelihood to have signed a petition about some environmental issue (Table 8) or to have given money to an environmental group (Table 9) in the last five years is also positively related with postmaterialism and with social position. However, the likelihood to have participated in a protest or demonstration about an environmental issue does not show such clear relations with the same two variables. Certainly, the relation is positive in most cases, but the differences among materialists and postmaterialists, or between social center and social periphery, are much smaller, and in some cases nonexistent or reversed. The weaker relation is more evident with social position, and this is a finding which should be expected on the basis of the theoretical assumptions which were made explicit at the beginning, in the sense that the social center reacts to decision

makers through organizations or mass media, while the periphery reacts through public demonstrations or non-action. In seven of the seventeen countries the proportion having taken part in a protest or demonstration about an environmental issue among those in the social center is smaller than in the middle positions and or in the social periphery, but postmaterialists exhibit a higher degree of participation in public demonstrations than materialists or "mixed" in all countries involved in this research.

#### 4. Concern for the Environment, a Consequence of too Successful Industrialization?

Postmaterialism theory, as formulated by Inglehart, has generally emphasized concern for the environment as one of the main traits of a change in the value systems of advanced industrial societies. This change has been described as resulting from the change from a situation of generalized personal and economic insecurity (scarcity values) to another one where the majority of the population enjoys higher degrees of personal and economic security, the process having taken place through industrialization. The new cohorts born in advanced industrial societies after World War II would be the ones who have massively experienced the new situation of security, free from global war and scarcity, and taking for granted their material security, they have turned their concerns towards other more postmaterialist values, among which concern for environment seems to have attained a special relevance. The data from 17 very different societies which have been examined here support the hypothesis that postmaterialism is gradually growing everywhere, though at different levels and rhythms, so that it is more visible in more developed European countries as well as in other developed countries of North America, Asia and Oceania, but only in an incipient form in countries from East Europe. The two main hypotheses formulated by Inglehart, the scarcity hypothesis and the socialization hypothesis, find very significant support here.

But ecosystem theory seems to provide a plausible explanation for the emergence of concern about the environment precisely when industrialization was spreading throughout the world, and center-periphery theory seems to provide a plausible explanation of why and how the *social center* has been first in becoming concerned about the environment and has transmitted this concern to the rest of society, which has internalized it in different degrees according to its social distance from the *social center*. The positive and significant correlation between postmaterialism and social position in almost all countries included in this research is not only coherent with theoretical assumptions, but also very significant from a methodological perspective, given the crudeness of the measures of postmaterialism and social position that could be used.



Individuals in the social center (i.e., opinion leaders) seem to be more knowledgeable than postmaterialists about what causes damage to the environment, they have a more discriminating view than postmaterialists about the relation between economic growth and environment, they seem to be only slightly less willing than postmaterialists to accept sacrifices on behalf of the environment, and they behave only slightly better than postmaterialists to care for the environment. In most countries included in the present analysis postmaterialists belong to environmental groups, have signed petitions about environmental issues, have given money to environmental groups and have taken part in a protest or demonstration about an environmental issue in proportions which are very similar to those found among individuals in the social center.

Concern for the environment, one might conclude, though being part of the new set of values which has been labeled "postmaterialism", may probably be explained better as an instrumental response originating in the social center (at the societal and individual levels) as a result of a "successful" industrialization process that is threatening at present the survival of mankind itself. That may explain why, when society experiences "short-run" economic crises (i.e., as the one experienced in the late '80s in many of the countries of the European Union) concern for the environment declines below concern for economic growth, when other postmaterialistic values do not seem to be affected so immediately by those changes in the *objective* economic conditions (Díez-Nicolás, 1995). In fact, it seems theoretically plausible that, if economic growth declines in the future, and if social and economic inequalities continue to increase, concern for the environment might decline at the same time that other postmaterialist indicators continue to increase.

## Appendix

*Table 1. Distribution of Respondents on the Scales of Postmaterialism and Social Position*

	N=	Postmaterialism			Social Position		
		0.Mat.	1	2. Post.	Low	Middle	High
Australia	1.779	29,1	57,6	13,4	19,8	48,8	31,4
Germany-West	1.014	25,8	52,4	21,8	30,6	51,5	17,8
Germany-East	1.092	29,6	61,1	9,3	36,7	54,1	9,2
United States	1.557	28,7	57,5	13,7	17,2	50,2	32,7
Hungary	1.167	49,6	47,3	3,1	31,9	49,6	18,5
Italy	1.000	25,4	62,1	12,5	30,4	52,5	17,1
Ireland	957	27,0	60,7	12,3	34,4	50,3	15,4
Netherlands	1.852	27,7	58,2	14,1	26,2	53,5	20,2
Norway	1.414	28,6	62,5	8,8	29,9	55,9	14,3
Slovenia	1.032	39,9	51,3	8,8	30,7	50,6	18,8
Poland	1.641	58,9	36,6	4,6	33,8	48,4	17,7
Bulgaria	1.183	65,3	32,0	2,6	34,2	48,8	17,0
Russia	1.931	70,8	28,3	0,9	21,0	59,9	19,1
New Zealand	1.271	16,3	63,6	20,1	20,0	55,5	24,5
Canada	1.467	25,2	59,9	14,9	14,4	57,3	28,3
Japan	1.305	18,6	63,5	17,9	21,9	53,8	24,4
Spain	1.208	33,4	54,9	11,8	37,4	51,0	11,6

*Table 2. Correlation Coefficients of Postmaterialism with Age, Years in School, and Social Position.*

	Age	Years in School	Social Position
Australia	-.0718 *	.0910 **	.0709 *
Germany-West	-.2668 **	.1755 **	.1085 **
Germany-East	-.1903 **	.0757 *	.2052 **
United States	-.0492	.0973 **	.0937 **
Hungary	-.1761 **	.1040 **	.1559 **
Italy	-.1811 **	.2040 **	.1184 **
Ireland	-.1826 **	.0833 *	.1207 **
Netherlands	-.1561 **	.2101 **	.1666 **
Norway	-.0607	.2328 **	.1478 **
Slovenia	-.1900 **	.1035 **	.2879 **
Poland	-.1670 **	.2688 **	.2513 **
Bulgaria	-.2225 **	.2267 **	.2630 **
Russia	-.0679 *	.0135	-.0362
New Zealand	-.0206	.0378	.0704 *
Canada	-.0085	.0051	-.0465
Japan	-.1676 **	.1233 **	.0770 *
Spain	-.2393 **	.2255 **	.1632 **

1- Tailed Signif. : \* - .01 \*\* - .001

**Table 3. Knowledge about the Environment**

	Postmaterialism with:		Social Position with:	
	V36	V38	V36	V38
Australia	.0996 **	-.0470	.0559	-.2042 **
Germany-West	.2415 **	-.0797 *	.0780 *	-.0967 *
Germany-East	.1505 **	-.0926 *	.1096 **	-.2260 **
United States	.0712 *	-.0770 *	.0477	-.1969 **
Hungary	.0969 *	-.0185	.0982 *	-.2449 **
Italy	.1154 **	-.0635	.1174 **	-.1792 **
Ireland	.1290 **	-.1220 **	.2259 **	-.2061 **
Netherlands	.1624 **	-.0835 **	.0699 **	-.1920 **
Norway	.1014 **	-.0883 *	.0107	-.2202 **
Slovenia	.1071 *	-.1035 *	.1427 **	-.2213 **
Poland	.0737 *	-.1845 **	.1166 **	-.2604 **
Bulgaria	.1444 **	-.0065	.1708 **	-.1618 **
Russia	.0467	.0024	.0462	-.0825 **
New Zealand	.1009 **	.0052	-.0076	-.1832 **
Canada	.0557	.0356	-.0053	-.2375 **
Japan	.0449	.0070	.0489	-.1266 **
Spain	.0734 *	-.0653	.0973 **	-.0751 *

1- Tailed Signif. : \* - .01 \*\* - .001

V36: Greenhouse effect is caused by hole in earth's atmosphere

V38: All pesticides and chemicals used on food crops cause cancer in humane

*Table 4. Attitudes towards Economic Growth and Environment*

	Postmaterialism with:		Social Position with:	
	V19	V22	V19	V22
Australia	-.1318 **	-.0255	-.0647 *	-.1047 **
Germany-West	-.1734 **	.0308	.0561	-.0984 *
Germany-East	-.1065 **	.0284	-.0007	-.1504 **
United States	.0121	-.0955 **	-.1289 **	-.1734 **
Hungary	-.0019	.0018	-.0506	-.1162 **
Italy	-.0118	-.0460	-.0777 *	-.1293 **
Ireland	.0393	-.0963 *	-.1293 **	-.1563 **
Netherlands	-.1240 **	-.0456	-.0772 **	-.0845 **
Norway	-.1704 **	-.0280	-.1398 **	-.1244 **
Slovenia	-.0603	.0094	.0038	-.0690
Poland	-.0713 *	-.0423	-.1020 **	-.1568 **
Bulgaria	-.0055	-.0563	.0458	-.1021 **
Russia	-.0217	-.0748 *	.0863 **	.0105
New Zealand	-.0473	.0684 *	-.1050 **	-.1207 **
Canada	-.0555	.0016	-.0252	-.1827 **
Japan	-.1188 **	.0398	-.0299	-.0165
Spain	.0006	-.0201	-.0458	-.0964 **

1- Tailed Signif. : \* - .01 \*\* - .001

V19: Economic growth is needed in order to protect the Environment

V22: Economic growth always harms the Environment

**Table 5. Pre-dispositions to Act on Behalf of the Environment**

	Postmaterialism with:		Social Position with:	
	V24	V26	V24	V26
Australia	.0949 **	.1133 **	.0442	.0707 *
Germany-West	.2670 **	.2817 **	.0917 *	.1032 **
Germany-East	.2361 **	.1837 **	.1250 **	.1415 **
United States	.0812 **	.0403	.0896 **	.1082 **
Hungary	.1311 **	.1000 **	.2954 **	.1404 **
Italy	.1287 **	.1380 **	.1602 **	.1381 **
Ireland	.1977 **	.0892 *	.2135 **	.2354 **
Netherlands	.1313 **	.1678 **	.1062 **	.1150 **
Norway	.1550 **	.1426 **	.0209	.0245
Slovenia	.2101 **	.1967 **	.1384 **	.1967 **
Poland	.0756 *	.1313 **	.1769 **	.2059 **
Bulgaria	.1982 **	.1978 **	.2935 **	.2756 **
Russia	.0840 **	.0861 **	.0766 **	.0510
New Zealand	.1160 **	.1207 **	.0951 **	.0395
Canada	.0879 **	.0609	.0368	.0445
Japan	.1574 **	.0877 **	.1673 **	.0750 *
Spain	.0898 *	.0775 *	.0981 **	.1476 **

1- Tailed Signif. : \* - .01 \*\* - .001

V24: Willingness to pay much Higher Prices in order to protect the Environment

V26: Willingness to accept Cuts in own Standard of Living in order to protect the Environment

*Table 6. Reported Behaviour on Behalf of the Environment*

	Postmaterialism with:		Social Position with:	
	V56	V57	V56	V57
Australia	.0552	.0023	-.0258	-.1291
Germany-West	.0802 *	.0983 *	-.0063	-.0006
Germany-East	.0576	.0164	-.0422	-.0002
United States	.0622 *	.0248	.1126 **	-.0403
Hungary	.0204	.0351	.0923 *	.0424
Italy	.0776	.0894 *	.0114	.0768
Ireland	.0928 *	.0640	.1543 **	.0050
Netherlands	.0407	.0129	-.0045	-.0422
Norway	.0403	-.0116	-.0249	-.1435 **
Slovenia	.0986 *	.0997 *	.0882 *	.0355
Poland	.0784 *	.1004 **	.0834 *	.1269 **
Bulgaria	.1422 **	.1615 **	.1435 **	.2246 **
Russia	.0133	-.0209	-.0227	-.0023
New Zealand	.0633	.0656	.0255	-.1208 **
Canada	-.0036	.0492	.0464	-.1935 **
Japan	-.0090	-.0039	-.0078	-.0914 **
Spain	-.0476	.0268	.0914 *	.0082

1- Tailed Signif. : \* - .01 \*\* - .001

V56: Frequency of efforts to sort glass, tins, plastic, newspapers, etc., for recycling

V57: Frequency of efforts to buy fruits and vegetables grown without pesticides or chemicals

*Table 7. % Who are Members of Group to Preserve or Protect the Environment*

	Total	Postmaterialism			Social Position		
		0.Mat.	1	2. Post.	Low	Middle	High
Australia	9.6	6.4	9.3	17.6	7.1	8.2	13.2
Germany-West	5.5	3.8	6.0	6.3	3.9	5.0	9.9
Germany-East	2.9	1.5	3.0	6.9	3.2	2.9	2.0
United States	10.0	8.5	9.4	15.9	6.3	10.5	11.2
Hungary	3.0	2.9	3.3	-	1.1	2.9	6.5
Italy	4.7	2.0	4.5	11.2	3.9	3.8	8.8
Ireland	4.0	1.9	4.3	6.8	2.7	3.3	8.8
Netherlands	16.7	9.7	18.4	23.8	11.9	17.4	21.3
Norway	5.0	4.4	4.6	9.6	2.8	5.3	8.4
Slovenia	3.7	2.4	3.8	8.8	1.9	4.4	4.6
Poland	3.5	3.6	3.2	5.3	2.3	3.9	4.8
Bulgaria	1.9	1.7	1.8	6.5	0.7	1.2	6.0
Russia	2.4	2.4	2.4	-	1.2	2.2	4.1
New Zealand	17.3	16.4	16.5	20.7	12.2	17.0	22.2
Canada	6.5	6.5	6.5	6.9	6.6	6.1	7.5
Japan	2.1	0.4	2.4	3.0	1.8	2.0	2.8
Spain	2.4	1.5	2.4	4.9	0.7	2.8	6.4



**Table 8.** % Who in the Last Five Years Have Signed a Petition About an Environmental Issue

	Total	Postmaterialism			Social Position		
		0.Mat.	1	2. Post.	Low	Middle	High
Australia	43.1	32.9	44.7	58.0	36.5	43.8	46.0
Germany-West	30.7	17.9	29.2	49.3	23.2	31.9	39.8
Germany-East	27.9	17.0	31.3	40.2	22.4	31.7	27.7
United States	29.3	22.1	30.4	39.7	10.8	26.9	42.7
Hungary	5.2	3.8	6.0	16.7	2.4	5.4	9.7
Italy	23.7	14.2	25.3	35.2	14.5	25.7	33.9
Ireland	20.5	14.0	20.8	33.1	10.9	20.6	41.5
Netherlands	22.9	15.8	22.2	40.2	14.4	24.0	31.2
Norway	17.8	11.1	18.2	36.0	14.5	18.7	20.8
Slovenia	10.5	5.3	11.0	30.8	6.6	10.5	16.5
Poland	9.9	7.3	12.5	21.3	4.9	11.6	14.8
Bulgaria	8.7	6.0	13.7	16.1	3.5	10.1	15.4
Russia	10.6	10.6	10.4	17.6	9.6	11.1	10.3
New Zealand	51.8	40.1	50.6	65.2	35.4	54.7	58.8
Canada	42.2	40.5	42.4	44.0	34.9	41.4	47.5
Japan	24.7	18.9	25.2	28.8	14.7	25.4	32.1
Spain	15.0	8.9	16.3	26.1	6.6	18.0	28.6

**Table 9.** % Who in the Last Five Years Have Given Money to an Environmental Group

	Total	Postmaterialism			Social Position		
		0.Mat.	1	2. Post.	Low	Middle	High
Australia	40.7	34.6	39.6	58.8	30.9	42.2	44.5
Germany-West	18.9	11.1	18.5	29.4	15.5	17.8	28.2
Germany-East	9.3	5.9	10.0	15.7	8.2	9.0	15.8
United States	-	-	-	-	-	-	-
Hungary	4.3	3.8	4.5	8.3	2.2	4.8	6.5
Italy	13.6	6.3	14.2	25.6	8.6	14.3	20.5
Ireland	22.6	12.8	26.2	26.3	10.9	24.1	43.5
Netherlands	43.5	31.2	45.2	60.5	31.3	44.7	56.0
Norway	28.1	23.2	29.6	32.8	25.8	27.1	36.6
Slovenia	7.8	5.1	8.3	16.5	5.1	7.5	12.9
Poland	17.7	15.3	20.8	24.0	10.6	19.9	25.5
Bulgaria	3.8	2.7	6.3	-	1.2	4.5	7.0
Russia	9.9	9.6	11.2	-	10.3	10.5	7.6
New Zealand	45.9	40.6	43.8	57.0	30.7	46.0	58.2
Canada	38.3	37.0	37.3	44.5	27.8	38.1	44.1
Japan	10.7	10.7	10.0	13.3	10.2	10.4	11.9
Spain	10.0	6.9	11.2	13.4	6.2	10.7	19.3

*Table 10. % Who in the Last Five Years Have Taken Part in a Protest or Demonstration about an Environmental Issue*

	Total	Postmaterialism			Social Position		
		0.Mat.	1	2. Post.	Low	Middle	High
Australia	4.5	3.9	3.4	10.5	4.2	4.3	5.0
Germany-West	8.3	1.5	8.1	16.7	7.1	9.0	8.3
Germany-East	8.6	5.6	9.4	12.7	7.5	9.7	6.9
United States	2.6	2.0	2.7	3.3	1.1	3.1	2.6
Hungary	1.5	1.0	1.4	8.3	1.1	1.2	2.8
Italy	6.7	2.8	7.9	8.8	5.6	7.0	7.6
Ireland	4.3	1.2	4.5	10.2	2.1	4.8	7.5
Netherlands	4.6	1.9	3.8	13.0	2.9	4.6	6.7
Norway	3.6	2.5	3.6	7.2	5.0	3.0	3.0
Slovenia	5.6	3.6	6.4	9.9	4.4	5.2	8.8
Poland	3.7	3.3	3.7	8.0	2.0	5.4	2.1
Bulgaria	6.0	4.5	8.7	9.7	2.7	7.5	8.5
Russia	3.9	3.6	4.8	-	5.4	3.3	4.1
New Zealand	3.8	3.9	2.8	6.6	4.7	3.8	2.9
Canada	5.9	5.4	5.1	9.6	8.5	5.5	5.3
Japan	2.7	2.5	1.8	6.0	1.4	2.8	3.5
Spain	5.5	2.2	6.8	9.2	1.5	7.1	11.4

## References

- Council of Europe (1993): *Recent demographic developments in Europe and North America 1992*. Strasbourg: Council of Europe Press.
- Council on Environmental Quality and Department of State (1980): *The global 2000 report to the President*. Washington D.C.: Government Printing Office.
- Díez-Nicolás, J. (1966): *Posición social y opinión pública (Social position and public opinion)*. *Anales de Sociología*, 2: 63-75.
- Díez-Nicolás, J. (1968): *Social position and attitudes towards domestic issues in Spain*. *Polls*, III, 2: 1-15.
- Díez-Nicolás, J. (1980): *La España previsible (Forhtcoming Spain)*. *Revista Española de Investigaciones Sociológicas*, 12:
- Díez-Nicolás, J. (1982): *Ecología humana y ecosistema social (Human ecology and the social ecosystem)*. In: CEOTMA, *Sociología y medio ambiente*. Madrid: MOPU.
- Díez-Nicolás, J. (1993): *Postmaterialismo y desarrollo económico (Postmaterialism and economic development)*. In: J.Díez Nicolás and R. Inglehart (eds.), *Tendencias mundiales de cambio en los valores sociales y políticos*. Madrid: Fundesco.
- Díez-Nicolás, J. (1995): *Postmaterialism and the social ecosystem*. In: Beat and Beatrix Sitter-Liver (eds.), *Culture within nature*. Paris: UNESCO.
- Díez-Nicolás, J. (1996): *Social position, information and postmaterialism*. *Revista Española de Investigaciones Sociológicas*, English edition: 153-165
- Díez-Nicolás, J. and R. Inglehart (eds.) (1993): *Tendencias mundiales de cambio en los valores sociales y políticos (World trends of change on social and political values)*. Madrid:Fundesco.
- Dimova, Lilia (1994): *Environmental attitude and behaviour*. Agency for Social Analyses Report.
- Duncan, O.D. (1964): *Social organization and the ecosystem*. In: R.E.L. Faris (ed.), *Handbook of modern sociology*. Chicago. Rand Mc Nally and Co.
- Duncan, O.D. and Schnore, F. (1959): *Cultural, behavioral and ecological perspectives in the study of social organization*. *The American Journal of Sociology*, LXV: 132-153.

---

Frizzell, Alan and Pammett, Jon H., (eds.) (1997): *Shades of green*. Ottawa: Carleton University Press.

Galtung, J. (1964): Foreign policy opinion as a function of social position. *Journal of Peace Research*, 3-4: 206-231.

Galtung, J. (1976): Social position and the image of the future. In: H. Ourmuer and others (eds.), *Images of the world in the year 2000*. Paris: Mouton.

Gendall, Phillip; Smith, Tom W.; and Russell, Deborah (1995): Knowledge of scientific and environmental facts: A comparison of six countries. *Marketing Bulletin*, 6: 65-74.

Hawley, A.H. (1986): *Human ecology. A theoretical essay*. Chicago: The University of Chicago Press.

Inglehart, R. (1977): *The silent revolution*. Princeton: Princeton University Press.

Inglehart, R. (1990): *Culture shift in advanced industrial society*. Princeton: Princeton University Press.

Inglehart, R. (1997): *Modernization and postmodernization*. Princeton: Princeton University Press.

King, A. and B. Schneider (1991): *The first global revolution*. London: The Club of Rome.

Meadows et al. (1972): *The limits of growth*. New York: Universe Books.

OECD (1980): *Interfuturos: de cara al futuro (Interfutures: facing the future)*. Madrid: Instituto Nacional de Prospectiva.

Rasinski, Kenneth; Tom W. Smith; and Sara Zuckerbraun (1994): A better environment, but at what price? fairness motivations and tradeoffs underlying public support for government spending on the environment in nine nations. *Journal of Social Issues*, 50: 179-197.

Skjaak, Knut Kalgraff (1996): ISSP 1993: Attitudes towards the environment. NSD Brukermelding, N° 2.

Skrentny, John D. (1993): Concern for the environment: A cross-national perspective. *International Journal of Public Opinion Research*, 5: 335-354.

Thomas, Tessa (1995): A bit green about the environment. *The European Magazine*, 270: 15-20.

Toffler, A. (1975): *The eco-spasm report*. New York: Bantam Books.

United Nations (1975): Report on the social situation of the world, 1974. New York.

United Nations (1987): Our Common Future. UN Commission on Environment and Development. New York.

United Nations (1992): Rio 92. UN Conference on Environment and Development. New York.

United Nations (1996 a): Report on human development. New York: UN Development Programme.

United Nations (1996 b): World population 1996. New York: Population Division.

van der Veer, K. (1976): Social position, dogmatism and social participation as independent variables. In: H. Ornauer and others (eds.), Images of the world in the year 2000, Paris: Mouton.

ZA (Zentralarchiv für Empirische Sozialforschung an der Universität zu Köln) (1995): Machine readable codebook, ISSP 1993, Environment. Köln:ZA.