The Persistence of Materialist and Post-Materialist Value Orientations*

JAN W. VAN DETH

Twente University of Technology, Enschede, The Netherlands

ABSTRACT

The theory of the Silent Revolution relates value change to the process of population replacement. Materialist and post-materialist values are seen as reflections of the conditions that prevailed during one's pre-adult years. This assumption is tested here by analysing a Dutch panel, questioned in 1974 and in 1979. The change actually found at the individual level is not in line with the predictions of the theory and leads to a dilemma. The first option implies a rejection of the socialization hypothesis - one of the cornerstones of the theory. The second option places considerable doubts on the reliability of the instrument. Moreover, the validity of the instrument seems to be questionable too. The remarkably similar marginal distribution of the materialist and post-materialist value types in both years, accompanied by massive shifts between the types, points into the direction of political attitudes and non-attitudes instead of basic orientations or basic outlooks.

By now, Ronald Inglehart's theory of the 'Silent Revolution' hardly needs an introduction. Presented for the first time a decade ago (Inglehart, 1971) and elaborated some years later (Inglehart, 1977), it has been the subject of further analysis by dozens of researchers in Western Europe, Japan, the USA, Australia and Canada (cf. Inglehart, 1981; 1982). With this theory Inglehart has tried to provide an explanation for the resurrection of political activism, radicalism, and the ideological modes of thinking about politics, which surprised the so-called 'post-industrial societies' of the late 1960s and which changed the social basis of the politics, the modes of political participation, the nature of the issues, and the support for national and international authorities in these countries. According to Inglehart, these changes in the political attitudes and behaviour should be seen as indicators of a more real change in the value priorities of the populations. This value change is the main subject of his theory and research.

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1. THE SILENT REVOLUTION

Originally, Inglehart’s theoretical framework leant heavily on the conception of a need hierarchy as proposed by the psychologist, Abraham Maslow. Maslow assumed that human behaviour is determined primarily by the level of satisfaction of some basic needs. The hierarchy of these needs consists of physiological needs, safety needs, belongingness and love needs, esteem needs, and the need for self-actualization (Maslow, 1970, 36–46). In the course of years Inglehart gradually replaced Maslow’s ideas by two key hypotheses (Inglehart, 1979b; 1981):

1. *a scarcity hypothesis:* an individual’s priorities reflect his socio-economic environment, where the greatest subjective value is placed on those things that are in relatively short supply;

2. *a socialization hypothesis:* one’s basic values reflect the conditions that prevailed during one’s pre-adult years.

The first hypothesis is a reformation of the common-sense notion that a hungry man will give top priority to obtaining something to eat. Actually, it is a restatement of the concept of diminishing marginal utility familiar from economic theory. The second hypothesis is a reversal of the functionalist idea that a change in an individual’s underlying motivational and personality needs, rather than changes in perceptual, connative, affective, or cognitive orientations towards some object, causes the individual to change his mind. It implies a rejection of approaches found in learning theory, perception theory, and consistency theory (cf. McGuire, 1969, 265).

From the beginning, Inglehart introduced a very un-Maslowian distinction between ‘material needs’, such as the need for physiological sustenance and safety, on the one hand, and ‘non-material needs’ such as the need for social, moral, intellectual and aesthetic gratification, on the other. Those who give top priority to the satisfaction of material needs were labelled by Inglehart as ‘materialists’; those who give top priority to satisfying non-material needs were called ‘post-materialists’. It is the combination of the two hypotheses stated above which leads to some specific expectations concerning value change, in materialist and post-materialist terms, among the mass publics of the highly industrialized countries of the West. People born before World War II have experienced poverty and/or unrest during their pre-adult years, and so remain likely to give top priority to economic and physical security. The younger generations have been brought up during an era of unprecedented prosperity and internal stability. It can be expected that they will assign top priority to non-material goals. Due to the continuous process of population replacement, post-materialism becomes an ever more important phenomenon, unless a long period of economic decline and/or internal disturbances reverses the process of value change in a materialist direction. Today, the importance of a change like this follows from the fact that the students and the activists of the late 1960s are the highly educated and well-pair technocrats of the present. In this stratum of first-class civil servants and top managers of about 35 years of age, post-materialism seems to be the dominant orientation. Ten years ago, the revolutionaries worked primarily in the Vietnam movement. Nowadays, they ‘furnish the ideologues and core support for the environmental zero-growth and anti-nuclear movements’ (Inglehart, 1981, 880).

In order to measure value priorities, Inglehart confronted his respondents with a
forced choice four-item question (Inglehart, 1971) and with an eight-item question (Inglehart, 1977, 44; 1979a, 312). Although the actual construction of the question has been altered in different studies, the wording of the four and eight items has remained the same. Respondents had to choose among:

A. * Maintain order in the nation;
B. * Give people more say in the decisions of the government;
C. * Fight rising prices;
D. Protect freedom of speech;

and among:

A. * Maintain a high rate of economic growth;
B. * Make sure that this country has strong defence forces;
C. Give people more say in how things are decided at work and in their country;
D. Try to make our cities and countryside more beautiful;
E. * Maintain a stable economy;
F. * Fight against crime;
G. Move toward a friendlier, less impersonal society;
H. Move toward a society where ideas are more important than money.

The items designed to tap material orientations are starred in this enumeration. The most widely used question format instructs the respondent to rank the first set of four items and to rank the three most important as well as the three least important items of the second set. This question type has also been applied in the cross-national Political Action project (cf. Barnes, Kaase et al., 1979). In our study, both the Dutch part of this project, interviewed in 1974 and re-interviewed in 1979, and a fresh sample questioned in 1979 will be analysed. This format of the question leads to two disjunct sets of so-called preference data. For each respondent the order of the items is expressed in two strings of item numbers. Strings like these are usually called individual scales or I-scales (Coombs, 1964).

Instead of performing some type of unfolding analysis — a model designed for this type of data — Inglehart constructed what he calls ‘materialist/post-materialist indices’. The most elaborated index combines the responses to the four-item question with the results of the eight-item question. This index is based on the number of materialist and/or post-materialist items mentioned by each respondent (cf. Barnes, Kaase et al., 1979, 565). The range of this index is from 1 (materialist extreme) to 10 (post-materialist extreme). On the basis of this 10-points score, Inglehart constructed a four-points typology of value types. Most of the research reported until now deals with the correlations between the scores on Inglehart’s instruments and measures of other socio-political orientations, personality characteristics or background variables (Inglehart, 1977; Hildebrandt and Dalton, 1977; Herz, 1979; Barnes, Kaase et al., 1979). These findings are not discussed here. The emphasis will be on the stability of the scores, since the theory states that, once learned, the value orientations remain more or less stable in later life. This intrapersonal persistence is of crucial importance for Inglehart’s theory. It distinguishes the theory of the Silent Revolution from the common-sense notion of marginal utility by adding the socialization hypothesis.

Confronted with data indicating a relationship between age and value priorities, the choice between period effects, cohort effects, or ageing has to be made. Inglehart
restricts cohort effects to birth cohort effects, and, although he takes ageing and period effects into account as concurrent explanations, there is no place in his theory for a significant causal relation between these two effects and changes in the basic values. In other words, no interaction between age and period is allowed in the adult range. This dislike of especially the life-cycle hypothesis for explaining value change seems to be a very interesting and provocative challenge to the theories of ageing, which usually stress the importance of processes like biological, social or psychological ageing (cf. Glenn, 1978, 19).

The prediction of stable value types at the micro-level can be falsified by showing that, at that level, the scores on the instruments are not stable. Such a test does not require a sophisticated (causal) analysis of the determinants of the scores or the change. What is needed is a precise measure of the differences between at least two points in time, in order to answer the question whether the materialist/post-materialist orientations are relatively persistent or not. Several other analyses have used such diachronic data bases to test Inglehart's ideas. Mostly those analyses have attempted to test indirectly the cohort hypothesis versus the rival life-cycle hypothesis. (Ike, 1973; Dalton 1977; Herz, 1979; Inglehart, 1981). Only rarely are panel data available to track value change at the individual level, and usually these are not representative samples from the total population (Lang, 1979; Dalton, 1981). The Dutch panel analysed here, however, is a representative sample of the total population of 16 years and older. Interviews were conducted in the spring of 1974 and in the autumn of 1979. Both the idea of value change and the assumption of intra-individual persistence of value orientations can be tested with our data. First, the net change at the overall level for the two samples of 1974 and 1979 will be considered. Thereafter, attention will be paid to the intermediate level and it will be seen whether possible change are due to cohort or to life-cycle effects. Although the implications of Inglehart's theory concern some aggregate level, his key hypotheses explicitly deal with the individual level. Aggregation to birth cohorts only leads to a surrogate variable to identify people who have experienced the same socialization. The third step, then, brings us to the individual level. There the answer should be found to the question whether possible net change at the overall level is a reasonable indication of individual change.

2. CHANGE AT THE OVERALL LEVEL

A comparison of the distribution on the I-scale, obtained with the four-item instrument in 1974 and 1979, indicates virtually no net change. In the two samples, all 24 permutations of the four items are mentioned by the respondents. In addition, a uniform distribution is suggested, since the mean frequency of the scales is about 4.1% on both occasions. Perhaps more information can be obtained from the second question in our surveys. The possible permutations in this case (that is, without reference to some J-scale) are 20.160, since six items have to be ranked from a pool of eight items. Theoretically, our interviews in both surveys can reveal 2,800 different I-scales, but even in that case there remains a majority of empty cells in the response pattern frequency count. In fact, that is what happened in our surveys. Only a few I-scales appear three or four times in each data set; all other respondents have unique response patterns. Obviously, these results do not allow a meaningful evaluation in terms of persistence or change.
Among the indices and typologies constructed by Inglehart, the 10-points materialist/post-materialist index seems to be the most appropriate instrument for analysing possible change. This index is based on the 12 items taken together; it has a reasonable range, and it is not inflated by minor changes. Figure 1 illustrates the differences in the frequency distribution of this index. Although especially the increasing popularity of scores 5 attracts attention, the frequency profiles seem to be rather similar. As has been mentioned, Inglehart usually collapses the 10-points index into a four-points typology. Figure 1 shows a moderate increase of the relative share of the so-called 'mixed materialist' type (scores 4, 5). The other three types reveal very small decreases. However, the changes in both directions are certainly not spectacular.

Although the comparison of the distribution of the I-scale did not provide much information, one conclusion can be stated. The distribution of the scores on the materialist/post-materialist index did not change at the overall level, and so no increase in the relative share of post-materialists or materialists can be observed. Now, one implication of Inglehart's choice of the cohort interpretation is the expectation of an increasing relative share of post-materialists due to population
replacement and because of the lack of poverty and turmoil in the most recent past. The new cohort added to the relevant population after our first survey in 1974 should consist predominantly of post-materialists. The other cohorts are assumed to be stable while the oldest – predominantly materialist – cohort is assumed to be slowly disappearing. Figure 1 refutes the idea of the increasing relative share of post-materialists at the mass level. Both the share of materialists in the total population and the share of post-materialists is lower in 1979 than in 1974, the question arises whether this result should be ascribed to ‘deviant behaviour’ of the new cohort (perhaps due to the economic recession), or to changes in the orientations of the other cohorts (ageing or period effects).

3. CHANGE AT AN INTERMEDIATE LEVEL: AGE AND COHORT GROUPS

In order to answer the last question, a method designed by Klecka (1971) will be applied. The purpose of this method is to indicate the relative likelihood of cohort versus life-cycle effects. Since the focus is on factors intrinsic to these two effects, it is assumed that the remaining variance is due to chance, error or general period effects. This is, obviously, a heroic assumption. Cohort, life cycle, and period effects are linearly dependent on each other, and so they are logically and not only experimentally confounded (cf. Schaie, 1965; Mason et al., 1973; Hagenaars, 1977; Goldstein, 1979b). The very unattractive choice here is between accepting a clearly dubious assumption and obtaining some tentative conclusions on the relative impact of cohort and life-cycle effects on the one hand, or to say nothing at all about the impact of the three effects on the other. The first option is adopted here.

Klecka introduces the assumption that each cohort or age group will change – apart from cohort or age groups effects – by the same proportion as the total population changes. This assumption makes it possible to compute an expected value for each cohort or age group in 1979, based on the values in 1974 and the overall change rate. The absolute differences between the standardized expected and the observed frequencies are averaged. The resulting summary statistic is called the average difference percentage (ADP). The lower the ADP for a cohort or age group table, the less are the differences between the observed and the expected values. On average, greater consistency over time within cohorts than within age groups leads to a lower ADP for the cohort table than for the life-cycle table. A higher ADP for the cohort table than for the life-cycle table indicates, of course, that on average the consistency within age groups over time is greater. Hence, the relative impact of each effect can be assessed by comparing the ADPs for the two tables. The results of such an analysis are shown in Table I. A so-called standard-cohort table has been constructed for the two pure value types. These types are identified on the basis of the scores on the 10-points materialist/post-materialist index.

The first thing to note is the ‘normal behaviour’ of the newest cohort. This group contains 9.5% pure materialists and 25.3% pure post-materialist (see first row of the life-cycle matrix). These figures are about equal to those of their precursors (9.1% and 26.3% respectively in 1979). On the other hand, the number of pure materialist of 70 years and older decreased from 39.4% to 22.0%. Since these results are in line with expectations, the stability found at the overall level should be ascribed to changes among the other cohorts. Applying Klecka’s method to Table I might reveal
### TABLE I. Cohort and life-cycle matrices for materialists and post-materialists

#### a. Cohort matrix 1974–79

<table>
<thead>
<tr>
<th>Birth</th>
<th>% pure materialists</th>
<th>% pure post-materialists</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974</td>
<td>DP</td>
<td>1979</td>
</tr>
<tr>
<td>52-57</td>
<td>9.1</td>
<td>28.7</td>
</tr>
<tr>
<td>46-51</td>
<td>13.4</td>
<td>26.3</td>
</tr>
<tr>
<td>40-45</td>
<td>13.3</td>
<td>26.7</td>
</tr>
<tr>
<td>34-39</td>
<td>18.7</td>
<td>24.3</td>
</tr>
<tr>
<td>28-33</td>
<td>24.5</td>
<td>15.1</td>
</tr>
<tr>
<td>22-27</td>
<td>23.1</td>
<td>10.6</td>
</tr>
<tr>
<td>16-21</td>
<td>29.5</td>
<td>16.8</td>
</tr>
<tr>
<td>10-15</td>
<td>23.8</td>
<td>14.3</td>
</tr>
<tr>
<td>04-09</td>
<td>19.4</td>
<td>11.3</td>
</tr>
<tr>
<td>vóór 04</td>
<td>39.4</td>
<td>10.6</td>
</tr>
</tbody>
</table>

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<tr>
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<tr>
<td>vóór 04</td>
<td>39.4</td>
<td>10.6</td>
</tr>
</tbody>
</table>

#### b. Life-cycle matrix 1974–79

<table>
<thead>
<tr>
<th>Life stage</th>
<th>% 'pure materialists'</th>
<th>% 'pure post-materialists'</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974</td>
<td>DP</td>
<td>1979</td>
</tr>
<tr>
<td>16-21</td>
<td>9.1</td>
<td>28.7</td>
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<td>52-57</td>
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<td>16.8</td>
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<td>58-63</td>
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<td>14.3</td>
</tr>
<tr>
<td>64-69</td>
<td>19.4</td>
<td>11.3</td>
</tr>
<tr>
<td>70-</td>
<td>39.4</td>
<td>10.6</td>
</tr>
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</table>

some insight on this point. But the results are rather puzzling. Is 'materialism' predominantly a cohort or a life-cycle effect? The ADPs are respectively .236 and .278. The conclusion has to be that a change in the overall percentage of materialists is, first of all, a cohort effect. Next, we consider 'post-materialism'. The ADPs in this case are .167 and .101 for the cohort and the life-cycle matrices. In this case, the data point in the direction of a life-cycle explanation for the difference in the total number of post-materialists! It is difficult to accept these results and at the same time to defend one materialist/post-materialist dimension.

A closer look at the tables indicates another pattern. In each of the four sub-tables there are positive DPs in about the first four rows, and some negative DPs in the lower rows of all tables. This holds irrespective of whether materialism post-materialism, or whether a cohort effect or a life-cycle effect is considered. Until
about the birth cohort 1934–39/age 40–45, the observed frequencies are higher than
the expected ones. For older cohorts or age groups the observed frequencies are
lower than expected. Inglehart has frequently stressed the fact that there seems to be
something like a ‘watershed’ between the pre-war and the post-war groups. An
observation like that is in line with the positive and negative deviations in Table I if
we accept his concept of the formative (pre-adult) years as the most important
socialization period for an individual. However, Inglehart’s watershed has to do with
quite a distinct phenomenon. He has introduced the term to indicate the general
differences in the level of the scores for the pre- and post-war groups. The positive
and negative DPs of Table I only suggest a pattern in the direction of change and have
nothing to say about the level of the scores. But even apart from this important
distinction, imposing a dichotomy on the total population does not seem to be a
satisfactory simplification of the attractive idea of a continuous process of population
replacement. Why not ascribe the differences to the war, or to the experience of the
German occupation instead of applying some general developmental theory of the
individual? Defining a two-age-group-replacement process is but a weak extract
from the idea of a continuous process of population replacement.

Younger groups, raised after World War II, tend on average to remain more
attracted by extreme directions, while older groups are stable or move to the centre.
A rather trivial idea suggests itself: young people are more attracted to extremes than
older people. But this common-sense notion cannot account for change per age
group in the extreme directions, as especially the younger groups show. It is just a
restatement of the life-cycle explanation that has been rejected above. There has to
be some complex entanglement of the two effects. Since for each group the cohort as
well as the life-cycle effects are in the same direction, nothing is clear except the
difference between the pre-war and the post-war groups.

4. CHANGE AT THE INDIVIDUAL LEVEL

A first impression of intra-individual stability can be obtained by directly comparing
the priorities assigned to the items. It can be expected that priority ranking becomes
more and more unreliable after the first two or three items are selected. The main
property of the remaining items is that they are not preferred, and it is of minor
importance whether they are ranked sixth or seventh. At any rate, only 13% of the
respondents who ranked both sets completely (N = 569) mentioned the same
priority order for the four items in 1974 and in 1979; a majority (53%) even changed
its top priority. The results of the eight-item instrument show the same picture.
About 0.7% of the respondents chose the same priority order in 1979 as in 1974. A
somewhat larger majority (67%) changed its first choice out of the eight items. For
the two instruments together, none of the respondents revealed the same pattern for
the 12 items, and only about 17% held their top priorities constant for the two sets.
Although these results are much better than might be expected on the basis of random
response, in my opinion they are not exactly what might be expected from an
instrument designed to measure ‘basic outlooks’. But this test of Inglehart’s instru-
ment might appear to be somewhat overdone. After all, he would not have opted for
multiple item measurement if he believed that meaningful results could be obtained
from a closer look at single items. A fair test should concentrate on his indices and the
value types constructed on the basis of the responses to a set of single items.10
Changes in the materialist/post-materialist typology based on the four items are summarized in Table II. The first things to note are the extremely similar marginals of this table. This similarity also has been found for the total samples. The idea of stable ‘basic orientations’ seems to be rather promising now that the panel shows even more similar marginals than the total samples did.

However, the cell-frequencies of Table II tell quite a different story. The observed frequencies of the two ‘pure’ types, materialist and post-materialist, are stable for only 38.5% and 35.5% of the respondents respectively. Moreover, the majority of the respondents who belonged to one of the pure types in 1974 preferred a mixed type in 1979. At the same time the mixed types of 1974 divide themselves six years later over the pure types in a way so close to the marginal distribution that deviations appear only in the first decimal! The fact that no more than 2.5% of the respondents change preference from one extreme type to the other seems to be cold comfort in relation to the massive shifts in and out of the mixed type. On the basis of a much smaller panel (N = 93, interval six months, two waves) Sabine Lang concluded with respect to the same instrument ‘dass sich bei einem verhältnismässig grossen Prozentsatz der Befragten die . . . gemessenen Werte nicht verändert haben’ (Lang, 1979, 236). Although I will return to the question of the meaning of the term ‘verhältnismässig’, there does not seem to be much reason to agree with Lang with regard to the figures of Table II.

The most elaborate instrument designed by Inglehart is his 10-points index based on both the four- and eight-item questions. Since the score on this index is obtained by counting the number of materialist and/or post-materialist items mentioned, irrespective of which item is considered, it can be expected that these scores are more stable than the actual rankings of the items. In spite of this tolerance, no more than 25% of the respondents reached the same score in 1979 as in 1974, while the autoregression for the index is $\tau_{ib} = .36$ ($R = .43$). Is this ‘verhältnismässig’ stable? The scores are at least not more persistent than, for instance, the left-right

<table>
<thead>
<tr>
<th>TABLE II. Changes in pure value types (four-item typology)</th>
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<tbody>
<tr>
<td>1979</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>1974</td>
</tr>
<tr>
<td>Materialists</td>
</tr>
<tr>
<td>Mixed</td>
</tr>
<tr>
<td>Post-materialists</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
TABLE III. Changes in pure value types (10 points index – four-points typology)

<table>
<thead>
<tr>
<th>1974</th>
<th>1979</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pure</td>
</tr>
<tr>
<td></td>
<td>materialists</td>
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<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Materialists</td>
<td>52</td>
</tr>
<tr>
<td>Mixed materialists</td>
<td>47</td>
</tr>
<tr>
<td>Mixed post-materialists</td>
<td>28</td>
</tr>
<tr>
<td>Pure post-materialists</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>136</td>
</tr>
</tbody>
</table>

self-placement of individuals on a 10-points scale. In that case 26% of the respondents place themselves in the same category in 1979 as they did in 1974. However, the autoregression for this instrument is much higher: \( \tau_b = .52 \) (\( R = .65 \)).

Finally, Inglehart constructs the four-points typology on the basis of the 10-points index. Table III shows the results obtained with this typology. The results are quite similar to those obtained with the four-item instrument alone. Just as in Table II, the marginals in Table III are extremely similar. But again, this marginal similarity obscures the fact that there are quite massive shifts, predominantly in and out of the mixed types. Of the four types, only the pure post-material is able to commit a majority to stick by their 1974 type. Of the total group which scored both times, 41% of the respondents belonged in 1979 to the same category as they did in 1974. The autoregression for this typology is somewhat higher than that for the 10-points index: \( \tau_b = .42 \) (\( R = .49 \)). However, it is still not as high as the results obtained with the left–right self-placement scale, even when that scale is not collapsed from 10 to four points.

5. INTRA-INDIVIDUAL CHANGE

Operationally, it can be said that a person has changed when his or her scores on some instrument differ at two times. But even when the instrument remained ‘the same’, simply computing the differences between the two scores usually is the most practical as well as the most unreliable way to describe change (cf. Goldstein, 1979a). Relying on simple differences (‘raw gains’) implies that manifest attributes are not distinguished from latent ones and that no corrections are made for the correlation between the original scores and the difference.  

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Following classical test theory it can be stated that the observed score equals the true score plus some error component, so:

- for 1974: \( x_{74} = x_{74} + e_{74} \)
- for 1979: \( x_{79} = x_{79} + e_{79} \)

where: \( X \) = observed scores, for each respondent;
\( x \) = true scores, for each respondent;
\( e \) = error components.

(Further notation: \( R \) is product moment correlation, \( V \) is variance, \( \bar{X} \) is the mean of \( X \), and \( Z(X) \) stands for the standardized scores of \( X \).)

Large positive differences in the observed scores can be reached only by those persons who scored low in 1974, while large negative differences are most likely for those who scored high in 1974. From this it follows that the raw gains are negatively (or not at all) correlated with the observed scores of 1974. Thus some of the 1979 scores can be predicted from the scores in 1974. It might look anachronistic to reverse this reasoning and to predict 1974 scores from the 1979 results: 'But the logic is clear . . . persons higher on the post test than others having the same observed pretest score tend to be those for whom the true pretest score is higher than the observed score' (Cronbach and Furby, 1970, 72). After standardization to \( V(X) = 1 \), and \( \bar{x} = 0 \), the two-way residual gain can be defined as a measure of change:

\[
D = X_{79} - X_{74} = R(z(X_{74}) - (X_{79}))
\]

This definition has some advantages over raw gain scores or one-way residual gain scores. It is favourable to Inglehart's hypothesis of persistent responses, since disturbances are likely to be overcorrected. Furthermore, possible disturbances due to the 'regression to the mean effect' are balanced by the regression procedure in two ways.

Two questions can be answered by using this measure. First, has there been a change in the scores on the materialist/post-materialist index into some direction and, second, is the magnitude of possible change on this index relatively large, that is larger than, for instance, change on the left–right self-placement scale? A comparison of both the magnitude as well as the direction of change is presented in Figure 2. The frequency distributions shown in this figure are the differences defined above on the materialist/post-materialist index and the left–right self-placement scale. The application of the 'eye-ball technique' in Figure 2 reveals symmetrical distributions. Since the median is about zero, the first question should be answered negatively: there is no particular direction of the differences on the materialist/post-materialist index. The dispersion on this index is clearly larger than that on the left–right scale, and so the stability of the first is lower than that of the latter. This conclusion has already been suggested by the difference between the coefficients for autoregression mentioned previously. The answer to the second question should be that the magnitude of the change on the materialist/post-materialist index is relatively larger than the change on the left–right self-placement scale.

The imperfect intra-individual stability can be ascribed to the well-known noise in survey research; noise that results in stability at the overall level by evening out
differences at the lower levels. But perhaps more information can be obtained by assuming a systematic pattern in these residuals. The remarkably stable marginal distribution, accompanied by the serious turnover of value types and the change on the corrected index scores, suggests that the population consists of some nucleus of people with stable ideas and another group whose responses are random, or at least not predictable. This 'black-and-white' or 'mover-stayer' model is an extension of the model known as the 'Markov chain'. Converse has presented an impressive application of this idea by showing that respondents can be divided into those who really have some opinion and those who have not (Converse, 1970). Random answers (or 'non-attitudes') will be obtained when the objects lie beyond the daily ken of the subjects and/or when they have only ad hoc feelings toward them. It seems dubious to attach some middle score or mixed type label to these respondents. It is more appropriate to say that they do not score at all. The question is whether such groups can be located in our data.15

Table IV shows the results of a test designed to analyse the parameters of distinct (sub)populations. These subgroups have been defined according to the scores on a
few of the main background variables in the data set. The actual test applied is the Kruskal-Wallis one-way analysis of variance. With this test the null-hypothesis is tested to see whether the medians of the dependent variable in the subgroups are equal (Siegel, 1956, 184–93). As the level of significance in Table IV indicate, no very important deviations in the median change over the subgroups seem to exist, except for the level of general political involvement in 1979.

Inglehart’s items are all concerned with 'government and politics' and so, it might be expected that respondents indicating more interest in politics will be more familiar with the items and the idea of assigning priority to them. The autoregressions for the

TABLE IV. Kruskal-Wallis test for change over subgroups

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>n groups</th>
<th>n cases</th>
<th>$X^2$*</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohort</td>
<td>11</td>
<td>730</td>
<td>15.2</td>
<td>.12</td>
</tr>
<tr>
<td>Born before/after '33</td>
<td>2</td>
<td>730</td>
<td>0.00</td>
<td>.97</td>
</tr>
<tr>
<td>Sex</td>
<td>2</td>
<td>730</td>
<td>1.2</td>
<td>.27</td>
</tr>
<tr>
<td>Education</td>
<td>7</td>
<td>718</td>
<td>8.7</td>
<td>.19</td>
</tr>
<tr>
<td>Income 1974</td>
<td>10</td>
<td>478</td>
<td>6.0</td>
<td>.74</td>
</tr>
<tr>
<td>Income 1979</td>
<td>10</td>
<td>451</td>
<td>4.7</td>
<td>.86</td>
</tr>
<tr>
<td>Class identification '74</td>
<td>3</td>
<td>288</td>
<td>1.6</td>
<td>.92</td>
</tr>
<tr>
<td>Class identification '79</td>
<td>3</td>
<td>357</td>
<td>.43</td>
<td>.81</td>
</tr>
<tr>
<td>Political involvement '74</td>
<td>4</td>
<td>723</td>
<td>.99</td>
<td>.80</td>
</tr>
<tr>
<td>Political involvement '79</td>
<td>4</td>
<td>709</td>
<td>10.7</td>
<td>.01</td>
</tr>
</tbody>
</table>

* Corrected for ties.

corrected scores on the materialist/post-materialist index are summarized in Table V. The pattern of this table seems to provide strong support for the idea of increasing stability when the level of political involvement is high. Those people who are interested in politics apparently know what they are talking about and they do not change their minds overnight. People not involved in politics only have **ad hoc** feelings toward the items or are unable to attach meaning to them, since the content of the items lies beyond their daily ken. Therefore, the most unstable results should be obtained for those people not interested in politics. Table V provides strong evidence for this hypothesis.

From this analysis a very unattractive dilemma emerges for silent revolutionaries. Either it is assumed that the change found is true change, or it is assumed that the differences are errors and that no true change has taken place. The first option implies a rejection of the socialization hypothesis, one of the cornerstones of the theory. This implication could be avoided by taking the second option. But this means that the autoregressions of the scores should be seen as a measure of test-retest reliability of the instrument. For the actual scores this figure was $R = .43$; for the corrected scores it is $.52$. To quote Converse: ‘... we were prepared to send the whole instrument back to the shop for repairs, since a reliability coefficient of .3 is disastrously low’ (Converse, 1970, 176). However, from Table V the answer of the shopkeeper can be known before hand, even when, as in our case, the coefficients are not as low as .3. He presumably would say that no repairs are needed for Inglehart’s instrument but that only adequate usage guarantees meaningful results. Since the
TABLE V. Test-retest reliability for the 10-points index (corrected scores) Pearson R (total R = .52; N = 730)

<table>
<thead>
<tr>
<th>Political involvement in 1979</th>
<th>Very interested 1</th>
<th>Interested 2</th>
<th>Somewhat interested 3</th>
<th>Not at all interested 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very interested</td>
<td>.77</td>
<td>.66</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Interested</td>
<td>.65</td>
<td>.58</td>
<td>.52</td>
<td>*</td>
</tr>
<tr>
<td>Somewhat interested</td>
<td>.20</td>
<td>.46</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Not at all interested</td>
<td>.6</td>
<td>.26</td>
<td>.44</td>
<td>.47</td>
</tr>
</tbody>
</table>

* Not significant at the 5% level.

instrument consists of political items, it is doubtful to expect that respondents showing low political involvement will present more than ad hoc feelings towards them. In other words, the validity of the instrument for the total population is also questionable when the second option is preferred.

Parallel to this line of reasoning is the suggestion that the pattern underlying the items could have changed over the period, rather than the respondents. The meaning of the items can change, and so the validity of the instrument once more comes into question (cf. Bereiter, 1963, 18). Inglehart applies the factor model to show that there does indeed exist one materialist/post materialist dimension (Inglehart, 1977, 43). Herz has proposed the use of the more appropriate smallest space analysis. This also leads to a one-dimensional materialist/post-materialist dimension (Herz, 1979; see also Inglehart, 1980). A modified variant of Herz’s analysis has been performed on our data. In 1974 as well as in 1979 the materialist/post-materialist dimension is easily drawn into two-dimensional spaces. Differences are apparent, but do not override the materialist/post-materialist dichotomy required for the computation of the Inglehart index, and so the validity of the instrument is not suspected due to changes in the pattern underlying the items.

This analysis of change on the materialist/post-materialist index and its covariates reveals that the stability of the responses depends heavily on the question of whether the respondent is involved in politics. When the hypothesis of stable true responses has to be rescued, the instruments appear to be unreliable for people not interested in politics. But why should these people deny their ‘basic outlooks’, shaped under the same conditions as the outlooks of their colleagues interested in politics, who do not deny their ‘nature’? Although Inglehart avoids the term ‘attitude’ consistently, the unreliability of the responses seems mainly due to the fact that he measures political attitudes and non-attitudes toward a set of the main political issues in industrial societies, more or less meaningless for people not involved in politics. There is of
course nothing indecent about this. But there is likewise little room for claims of superiority, as suggested by the assertion that he taps 'basic orientations' or 'basic outlooks' underlying the cognitive and connative orientations of the individual.

6. CONCLUSION

The results of the analyses presented here lead to a plea for a Silent Evolution of the ideas developed and operationalized by Ronald Inglehart: first, because the change actually found in the Netherlands in the period 1974–79 is not in line with his socialization hypothesis; second, because his instruments did not prove to be reliable for the total population; and third, because he seems to have measured attitudes and non-attitudes instead of something more basic that might deserve the term values.

This conclusion, however, does not imply an unconditional rejection of Inglehart's theory. It only suggests that if the instruments are accepted as valid and reliable, then considerable doubts are placed on the main theses of the theory of the Silent Revolution. It seems that Inglehart, relying on synchronic data basis, has been misled by the remarkably stable overall distribution of his value types. This stability cannot be ascribed to the well-known randomly distributed noise in survey research since, in this case, the noise is systematically related to the level of political involvement.

A very unattractive dilemma appears. Either it is assumed that change has been observed, in which case the theory will have to be modified, or it is assumed that there was no change, where the conclusion will have to be that the validity and the reliability of the instruments are dubious. There is no definite way out of this dilemma; but, in my opinion, the fascinating ideas of Ronald Inglehart deserve better instruments to give them a fair chance in empirical research.

NOTES

1 More precisely, the origins of this hypothesis can be traced back at least as far as the famous laws of Gossen (cf. Roll, 1973, 374).

2 Why are older people more materialist?: because the satisfaction of material needs was lower than the satisfaction of post-material needs in their formative years, or because they were confronted with material and post-material needs at the same time and decided that something to eat might be more important than a friendlier society? The first answer is in line with the scarcity hypothesis, the second requires the addition of some notion of a hierarchy of needs. Either Inglehart has to prove that non-material needs were relatively more satisfied in the first decades of this century, or he has to apply a hierarchy. The statement of a simple scarcity hypothesis obscures the fact that he still uses a modified scarcity conception implying a rough need hierarchy. Obviously, the direction of this hierarchy is from (low) materialist to (higher) post-materialist needs. The rise and fall of the Masklowian background of Inglehart's work cannot mask the fact that some idea of a hierarchy is essential for his explanation.

3 It should be noted that Inglehart's index construction favours post-materialism. The maximum post-materialist score can be reached by mentioning four post-materialist items. The maximum materialist score requires five materialist items.

4 The types are: pure post-materialist (score 8–10), mixed post-materialist (score 6, 7), mixed materialist (score 4, 5), and pure materialist (score 1–3) (Inglehart, 1979a, 319).

5 The actual explanations for differences between distinct birth groups can be divided into two classes: the change can be due to differential exposure to significant historical events, or to changes in the process and content of socialization (Klecka, 1971, 358). Inglehart has dealt with this problem by stressing the importance of the socio-economic conditions during the pre-adult years. Critics like Lafferty (1976) point out that the second type of explanation should be taken into account more seriously.
In 1974 a sample of 1,800 Dutch inhabitants of the population of 16 years and older was drawn. This resulted in 1,201 interviews. Of these 1,201 respondents, 780 could be questioned again in 1979. An additional sample (1,250) resulted in 806 interviews in 1979. In this article both the total groups of 1,201 and 1,586 cases, as well as the panel of 780 respondents will be used. I am indebted to Dr Felix Heunks of Tilburg University for organizing the sampling, fieldwork and data preparation. These surveys are part of the Political Action project (cf. Barnes, Kaase et al., 1979). Data of the first wave, as well as information about sampling, are available from the Zentralarchiv für Empirische Sozialforschung, University of Cologne, West Germany.

From this consideration the argument follows that we should neglect the famous advice of Cronbach and Furby that there is 'no need to use measures of change as dependent variables and no virtue in using them' (Cronbach and Furby, 1970, 78). A description of change at the individual level seems highly relevant for Inglehart’s theory.

Recently, Dalton has also stressed the point that the items should be taken together and that too much confidence should not be placed on the single items of this set (Dalton, 1981, 7).

For the use of the Pearson product moment correlation coefficient (R), measurement at the interval level and normality have been assumed.

The main obstacle towards comparing the 1979 scores on the index with the 1974 results stems from the level of measurement of the data. Preference questioning, as applied by Inglehart, usually leads to the assumption of ordinal or nominal data, no matter how ingeniously the indices based on it are constructed. Only the assumption that the index represents an interval scale opens the door for a complete comparison of the scores. Apart from the interval level, an anchor-point between the two scales has to be assumed in order to obtain meaningful difference scores. Finally, the product moment correlations presuppose normal-distributed data. As will become clear, the scores are standardized, and so the anchor-point will be at the mean while standard units are used as the units of measurement. Normality is assumed.

Hence the two-way procedure cannot be accused of opting for the under-correction side of the 'over-correction–under-correction dilemma' (cf. Bereiter, 1963, 6).

Obviously, no tests on the mean difference on the index (like the T-test) can be used here. The scores are standardized to \( \bar{x} = \bar{y} = 0 \) and so the mean difference will also be zero.

Since our data set consists of two waves, the application of more sophisticated models for analysing panel data (Coleman model, Wiggins model, black-and-white model) is either impossible or meaningless since at least one additional measurement is necessary to estimate or to evaluate the parameters of these models.

The results presented in Table IV must be evaluated with care. First, it remains to be seen whether there exist systematic relations between the change in value priorities and change in other aspects. Only the levels of the scores on the background variables are used here. Second, some complex causal linking of the background variables might be helpful to account for a significant part of the change on Inglehart’s index. Moreover, causal linkings should be tested on the levels of the scores directly, and not on the differences used here (Cronbach and Furby, 1970).

The question used to measure general political involvement is: 'Some people follow regularly what’s going on at the government and in politics, while others are not that much interested in it. How about you? Are you very interested in politics, or somewhat, or not much, or not at all?'

No partial correlations between the level of involvement and the difference scores are computed, in order to avoid the introduction of additional assumptions about the level of measurement and the distribution of the scores on the involvement scale.

The programs KYST and MINISSA have been used. The stress (FORM 1) for the two-dimensional solutions is .024 (1974) and .013 (1979). A three-way analysis (INDSCAL) to trace differences in change for distinct subgroups did not lead to meaningful results.

This question allows answers quite similar to the ‘false class consciousness’ reasoning used to explain a lack of class attachment. Put in that framework, the reply to my findings could be that all people have stable basic orientations but that some are not aware of their own feelings. I do not have an answer to this way out: it makes falsification impossible.

Inglehart only presents a quotation of Robinson and Shaver indicating that attitudes and values are not principally different (Inglehart, 1977, 29). No references are made to the massive stock of psychological literature dealing with this difference.
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