

**CHANGEABLE WEATHER IN A COOLING CLIMATE
ATOP THE LIBERAL PLATEAU: Conversion
and Replacement in 42 GSS Items,
1972-1989**

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Abstract

This paper tracks trends (early 1970s to late 1980s) in US opinion for 42 General Social Survey items with liberal/conservative overtones. The broad question is whether the great "liberal" shift since World War II has ended; the narrow issue is the relative importance of cohort succession and intra-cohort shifts. Despite common impressions, the overall trend is more liberal than conservative but it conceals opposing "weather" and "climate" processes. Within cohorts ("weather") I find a conservative trend between the early and late 70s and a liberal "rebound" in the 80s. Between cohorts virtually all items show small but cumulative liberalizing produced by cohort succession. These cohort effects are declining in magnitude because the association between year of birth and liberalism is nonlinear. I find a curvilinearity such that Americans born after World War II are not consistently more liberal than their predecessors. This shift is not explained by the lesser schooling of youngest adults or by ceiling effects. Consequently, I predict lessening of the liberalizing "climate" produced by cohort succession. All these propositions are qualified, depending on the topic, and the analysis takes heed of the notorious Age/Period/Cohort identification problem.

This paper is about liberal and conservative trends in American attitudes during the 1970s and 1980s. It uses 42 items from the NORC General Social Survey (GSS) to:

- (1) assess overall liberal/conservative direction, i.e. trends in the marginals.
- (2) decompose changes into portions due to intra cohort shifts (conversion) and cohort succession (replacement).
- (3) scrutinize the conversion data to see whether rates and directions are consistent throughout the period.
- (4) scrutinize the replacement data to see whether cohort succession operates consistently throughout the period.

The paper builds from Smith's (1990) assessment of long term trends in American attitudes and Davis's (1980) "weather v. climate" metaphor. It is impossible to review the literature on such a broad topic. The 1990 edition of the GSS Annotated Bibliography (Smith and Arnold 1990) alone contains 179 studies on change in the variables treated here. The most similar previous study (Chafetz and Ebaugh 1983) treats the first half of the period covered here. Their results are consistent with mine, although they do not treat my main theme: intra and inter cohort processes. See also Kiecolt (1988).

Data

All the data come from NORC's General Social Survey, an almost annual, omnibus, item replication, personal interview, household study of US, English speakers 18 and older, living in households (Davis and Smith 1989). Respondents 18 and 19 years of age are excluded here to make the age categories tidy.

Using these and similar survey data Smith assessed trends from the late 1930s to 1987 for 455 survey items. He concludes (1990, pp. 502-503):

"Overall the post World War II period has been a time of liberal advance...(but) liberal movement slowed appreciably in the mid-1970s...liberal momentum and advance ended on the liberal plateau of the mid-1970s, but no general conservative advance occurred."

I chose 42 GSS items from Smith's collection, selecting items which (1) are widely used (2) cover a range of themes and (3) appeared throughout the 70s and 80s. I dichotomized each variable so all 42 would have similar distributions and assigned a Liberal (+) and Conservative (-) pole to the responses. (See Appendix 1 for details). I had no formal definition of Liberal/Conservative but assumed liberalism is associated with (1) tolerance or permissiveness (2) support for the welfare and redistributive state (3) sexual

and racial equality and (4) secularism. These scorings turned out to match Smith's more rigorous decisions (1990, pp. 480-482) in all cases, illustrating his conclusion that the distinction is theoretically fuzzy but practically reliable. I was not aiming to test any specific political hypothesis. I use the distinction to provide a conceptual framework to summarize dozens and dozens of isolated statistics. Since Appendix 2 contains the statistical results for each item, readers who reject my scoring are free to reconsider the analysis.

I grouped the items into six topical clusters. The grouping is mostly common sense but it turned out to catch some interesting variations. The topics and items (See Appendix 1 for mnemonics) are:

Crime(5): CAPPUN, COURTS, GRASS, NATCRIME, NATDRUG

FREE SPEECH(8): LIBATH, LIBCOM, LIBHOMO, PORNLAW, SPKATH,
SPKCOM, SPKHOMO, SPKRAC

POLITICS(9): COMMUN, NATARMS, NATCITY, NATEDUC, NATENVIR,
NATFARE, NATHEAL, PARTYID, POLVIEWS

RACE(5): BUSING, NATRACE, RACMAR, RACOPEN, RACSEG

RELIGION(6): ATTEND, FUND, LETDIE1, POSTLIFE, RELITEN, SUICIDE1

SEX/GENDER(9): ABHLTH, ABSINGLE, CHLDIDEL, FEHOME, FEPRES,
FEWORK, HOMOSEX, PREMARSX, XMOVIE

I grouped the GSS years into four periods for simplicity, to maintain case bases and because prior to 1988 the GSS used a rotation scheme such that "permanent" items appeared in only two out of three consecutive years. Table 1 summarizes:

(Table 1 enter)

It would be impossible to list the important events of each period and the results will cast doubt on the notion these items are affected by the sporadic episodes that generate press coverage. Nevertheless, Table 2 gives some historical context and points out some nonattitudinal trends:

(Table 2 here)

Politically, it was a Republican Presidential era, interrupted only by the Carter administration in Period 2. In terms of SES there was a substantial upgrading in educational attainment¹ and a discernable upgrading in occupational prestige while both financial items were u-shaped, with declines from Periods 1 to 2 to 3 followed by a recovery in Period 4 (the late 80s). Family structures display the well known trends away

from marriage and toward greater labor force participation by wives. Self ratings of Health were highly stable, but self-reported unhappiness decreased.

Raw Trends

Was there a conservative trend atop the liberal plateau? The simplest answer is given by comparing the marginals for Periods 1 and 4. The data appear in the right hand columns of Appendix 1 where we see the percentage Liberal for the early 70s and late 80s and the classic measure of association for a four-fold table, Yule's Q. I used Q rather than D because it dovetails better with the later "loglinear" analyses. The reader can calculate Ds from the appendix. Table 3 summarizes.

(Table 3 here)

Taking these numbers at face value, the trend in the 70s and 80s was in a liberal direction, not a conservative one: Positive Qs outnumber negative ones 24 to 14, the mean Q is +.071, the median is +.045, and nine of the ten items with magnitudes of .20 or more are liberal. Popular impressions to the contrary, American attitudes were distinctly more liberal in the late 1980s than in the early 1970s.

Noting that the items with the biggest Qs are mostly from the Race and Gender/Sex categories, let us look at a breakdown by content, as shown in Table 4.

(Table 4 here)

Table 4 suggests the net trends were distinctly positive for Race², Free Speech, and Sex/Gender; distinctly negative for Crime, and mixed for Religion and Politics. Additional crime items might pull the overall mean down but if each topic had the same number of items, the mean Q would still be +.063 in comparison with the +.077 in Table 3.

These liberal shifts during the 70s and 80s do not challenge Smith's plateau metaphor. Using the rule of thumb that a Q is twice as big as a percentage difference for the same table and the "adjusted" mean Q of +.063 from Table 4; on the average these items moved about three percentage points over 15 years or roughly two points per decade.

There appears to be an incline atop the plateau but it is gentle.

Intra-Cohort Shifts: Methods

The weather\climate metaphor implies a separation of these raw changes into (1) intra-cohort changes and (2) changes due to the succession of birth cohorts. Before grappling with the notorious methodological issues, let me explain my procedures.

First, I divided age into 13 five year intervals (20-24, 25-29,....75-79, 80+) and cross-tabulated them against the dependent variables within each of the four periods. Table

5 illustrates with the grand daddy of them all, SPKCOM, Samuel Stouffer's item on free speech for communists.

(Table 5 here)

Each age group moved up one category every five years. Thus, the 20-24 year olds in Period 1 appear as 25-29 year olds in Period 2, and 30-34 year olds in Period 4. Consequently, if we stagger the rows as in Table 5, we can follow birth cohorts over time. They are not the same respondents but they are samplings from the same populations. For example, consider the "class of '51", those who were age 20-24 in 1972-1974 (1973-22=1951). In the early 70s 72% chose the liberal (free speech) answer. Five years later they had become ages 25-29 and 68% gave the liberal answer, a four point drop.³ Similar comparisons showed a five point liberal shift in the early 80s and no change in the late 80s. This cohort became less liberal in the late 1970s, reversed course when it entered the early 80s and showed no change during the 80s. This is a typical pattern. Whether these inferences are statistically reliable remains to be seen.

To make these crucial comparisons clear, Table 6 displays the intra cohort shifts in SPKCOM for all cohorts, using Yule's Q.

(Table 6 here)

A scan of table 5 tells the story: in most cohorts the shifts are negative for Periods 1 to 2, mixed for Periods 2 to 3, and positive for Periods 3 and 4. Within cohorts, Americans became less tolerant (less liberal) on this free speech item during the late 70s, changed little as they entered the 80s and then became a bit more tolerant in the late 80s.

If the shifts are similar in each cohort (no Period/Cohort/Attitude interaction) one can summarize each period with a single number. The averages in table 6 (-.077, +.003, +.028) are a simple way, but iterative proportional fitting⁴ gives an appropriate test of the no interaction null hypothesis plus a more sophisticated measure of intra-cohort shift.

I made three separate runs, one for Period 2 v. 1, one for 3 v. 2, and one for 4 v. 3. "Non spanning cohorts" - persons 20-24 at time 2 and persons 80 and older at Time 1 were excluded⁵. Table 7 gives the results for SPKCOM.

(Table 7 here)

None of the three interactions is statistically reliable even with SRS calculations. Substantively, this means each cohort changed at about the same rate. More on this later. Technically, it justifies a simple way to estimate the three rates: run off no-interaction models and read the rate in the fitted data. Table 8 illustrates.

(Table 8 here)

In the fitted data the net shifts (in odds) will be identical in each cohort - by definition. One can simply read off the result for any convenient cohort; the others will be identical. For SPKCOM we get:

P2 v. P1: -.080

P3 v. P2: +.010

P4 v. P3: +.040

Table 8 also reports the shifts in percentage form. We see, as the textbooks tell us, identical odds produce slightly different d's as the marginals move toward or away from 50/50 but we also see, practically speaking, the d's and Qs tell the same story as the unweighted averages in Table 6, a conservative shift in the late 70s, no change in the early 80s and a small liberal shift in the late 80s.

To test for significance one may compare goodness of fit for models with and without the Period Effect i.e. (Period, Cohort)(Cohort, Dependent) versus (Period, Cohort)(Cohort, Dependent)(Period, Dependent). Table 9 gives the results for SPKCOM.

(Table 9 here)

The shift from the early 70s to the late 70s is statistically reliable. It is significant assuming simple random sampling and also assuming an effective N of .67N (See footnote 1). The shifts in the 80s, however are not statistically significant even assuming SRS.

Thus, within cohorts there was a reliable "conservative" trend on free speech for communists from the early 70s to the late 70s, but no reliable changes after that.

So far we have seen how the classic cohort table layout and simple log linear modeling allow us to describe intra-cohort shifts and assess their reliability. The procedures are explained in detail because they are carried out for each of the 42 items and comprise the main findings.

Before moving on to the results for the other 41 items, it is necessary to discuss two methodological issues.

The first problem is tabular control. Although tables such as Table 5 are the standard method for "cohort" studies, Firebaugh (1989) argues that the broad categories of tabular analysis do not provide sufficient control to partial out cohort differences. Thus, within each of the age categories (e.g. 30-34) there is still a five year spread in birth year. Firebaugh's general point is well taken, and analysts should confront the issue more often

than they do. However, I think one can marshal considerable support for Table 5. First, 13 categories are a lot of categories and when we get to our own regression analyses we will see that five years does not produce enormous differences in the dependent variables. Second, when one is contrasting variables (e.g. Period v. Cohort here) it is probably more important they have similar degrees of control than that the control be perfect. Here both Cohort and Period are chopped into identical five year intervals. Third, an informal experiment with even looser groupings of age suggests that "refinement" (Davis 1971, p. 83) doesn't make much difference⁶. Fourth, the association between cohort and period is quite small in tables excluding the "nonspanning" cohorts. Technically, this means (in path analysis terms) the product Period/Cohort and Cohort/Dependent is quite small and there isn't much of an effect to control for. Substantively, this means the major component of cohort change is the advent of the newcomer 20-24 year olds and the departure of the 80+ year olds, not the winnowing among those 20-79 at Time 1. All in all, the coarse category argument seems more impressive a priori than in this particular application.

Firebaugh, in turn, is criticized by Rodgers (1990), who waves the bloody shirt of the Age/Period/Cohort identification problem (Glenn 1976). Rodgers' point is also well taken. While the columns in Table 5 are labeled "Period", people in each row category age by exactly 5 years in each period; while the rows are labeled Cohort, each row category is five years younger or older than the next. Thus Age is inextricably confounded with Period and with Cohort. Granted, but nevertheless there is no question that within a row we are talking about the same people (sampling variation aside) and within each column we are talking about distinct populations. It follows that the set up does distinguish change by "conversion" (persons in a given row altering their opinions) from change by replacement (altered composition in terms of the column variable). That is the central Sociological question in this essay: how much change is coming from alteration of opinions from period to period, how much is coming from the substitution of new adults for old. Whether the conversion is due to Aging or due to Period or whether the substitution is of younger people or people born later in the century - neither can be determined by the design alone. I follow Rodgers and Glenn in believing no statistical hocus pocus can resolve the problem. Instead, we need measured intervening variables. One will turn up later.

Intra-Cohort Shifts: Findings

Having persuaded myself the methodological problems are not fatal, I proceeded to carry out the same calculations on the other 41 dependent items.

First, I tested Period x Cohort x Dependent interactions, ala Table 7. Of 123 tests (42 items x 3 period pairs - 3 na):

105 were insignificant (p. >.049)

17 were borderline (p. <.049, CN/N >.667)

1 was statistically reliable

Considering the generous sample sizes (typically five to seven thousand cases) the data are strikingly free of interactions. Indeed, there are hardly any hints of interactions. For example, in the 18 reliable or borderline cases, I compared the change for the youngest cohort with the pooled rate: In eleven cases the youngest changed faster, in three they changed in the same direction but with a smaller coefficient and in four cases they moved in the opposite direction⁷. This negative finding is so contradictory to sociological orthodoxy (that younger people change faster), it is reassuring to know similar conclusions were reached in (1) Chafetz and Ebaugh's (1983) review of GSS trends, (2) Shapiro and Page's monumental study of political attitudes (1984), and (3) long term studies of the Dutch (Social and Cultural Planning Office 1986).

On the methodological side, these findings justify the decision to estimate intra cohort shifts by modeling and they provide a scrap of negative evidence on the Age/Cohort matter. Since ages form diagonal ridges through tables such as Table 5, strong Age effects might be expected to produce interactions. For obviously age patterned variables such as Marital Status one does find significant Cohort/Period/Dependent Variable interactions (For marital status Never married/Married/Exmarried, all three interactions are highly [p,.001] significant) but not for our attitudes.

On to the actual intra-cohort shifts.

The detailed results, Qs and significance test decisions, appear in row two for each item in Appendix 2. Table 10 summarizes them:

(Table 10 here)

Table 10 hardly suggests cataclysmic social change. Of the 123 coefficients, less than half (44%) are statistically reliable even though the typical N's are three to six thousand cases. Across five year intervals these GSS items are as likely to show insignificant net change within cohorts as to generate a reliable difference.

Do the intra-cohort shifts, albeit modest, show a tilt to the right?

Starting with the simple grand totals in Table 10, I'd call it a draw. Negative (conservative) changes do outnumber liberal ones but only 64 to 54 and among the

statistically reliable it is 30 to 24 - no conservative landslide. There is no evidence of a pervasive shift to the right (or left) during the 1970s and 1980s.

But if we look at the periods separately, a pattern emerges, as shown in Figure 1.

(Figure 1 here)

Taking a Q of .08 or stronger as nontrivial^a, Figure 1 suggests a sort of ratchet effect, a rightward lurch in the late 1970s with the average item shifting -.08, and then little net movement in the 1980s.

A more nuanced reading comes from looking at topics and items. Figure 2 displays mean intra-cohort shifts by period and topics.

(Figure 2 here)

Reading Figure 2 by Period:

In the late 1970s, the POLITICAL items showed a striking conservative shift (averaging 24 Q points), while the other groups showed slight tendencies in the same direction.

In the early 80s, the CRIME items showed a definite conservative shift, while the other topics had a mixed pattern.

In the late 80s, RACE and POLITICS show substantial liberal trends while the other topics had mixed results.

Table 11 helps us read the same results by topic.

(Table 11 here)

The crime items are the only group to fit the popular impression of a thoroughgoing conservative shift. Aside from a hint of softness on drugs in the late 70s, all five tended in the conservative (punitive) direction, especially between the late 70s and early 80s. By the late 80s, all five showed cumulative negative intra-cohort shifts of .08 or more.

The political reaction of the late 80s was thoroughly conservative and large by the standards of these data. From the early 70s to the late 70s seven of the nine items showed negative shifts of .08 or larger and five exceeded 20 Q points. The themes are clear: anti-welfare state, pro-defense. The topic of politics being inherently topical, this pendulum reversed in the 80s, with eight of eleven changes being positive. As is characteristic of pendulums, the back swing was less strong, so the cumulative differences are heavily negative. In other words, shortly before the Americans elected Ronald Reagan, their issue

preferences moved sharply rightwards, but they tended to drift left during the 80s. Nevertheless, aside from the two welfare state items, spending on Education and Health, positions (within cohorts) in the late 80s were discernably less liberal than when the GSS began in the 70s.

Free Speech and Religion are the least volatile. Save for a cumulative anti-pornography trend, the coefficients are sparse, small, and non evocative.

Gender/Sex shows the least movement of any topic in Figure 2, but if we separate the two parts, Table 11 suggests liberalization regarding women's roles (positive cumulative Qs of .08 or more for CHLDIDEL, FEWORK, FEPRES, and FEHOME) and conservatism for ABSINGLE, ABHLTH, HOMOSEX, and XMOVIE, although the latter is really curvilinear, possibly reflecting the decline of X rated film houses followed by the diffusion of X rated home video.

Race items show a consistently liberal trend throughout the periods. The matter evokes some controversy since many social scientists are loath to think kindly on the racial attitudes of white Americans no matter what they tell interviewers. These results are hardly likely to settle the matter, though before writing them off as "symbolic racism" one should consider that BUSING, RACOPEN, and NATRACE are classic "implementation" (as opposed to "abstract principle") items. The first two show solidly positive trends. NATRACE does show a negative Q during the great political shift but one may observe that its value is not out of line with the declines for the nonracial political items. Perhaps one may appeal to both sides by saying there is sufficient undisguised white racism around (In the late 1980s a quarter of US adults still endorsed miscegenation laws, i.e. were minus on RACMAR) we needn't assume an increase in white racism to be unhappy about it.

In sum: the data had $(42 \times 3) - 2 = 127$ chances to show pervasive conservative intra-cohort shifts during the GSS years, 1972-1989. For one topic, attitudes to Crime, it came out that way. For the others the trends were either internally mixed (Gender), trivial (Free Speech and Religion), first conservative and then liberal (Politics) or even thoroughly liberal (Race).

The results make two obvious, but none the less important, theoretical points. First, there is not much here to support strong hypotheses about aging. Certainly there is no support for the proposition that "we all get more conservative as we age" since the tables are awash with positive signs. In its methodological form, the hypothesis that these are Age not Period effects would seem to require a lot more consistency from period to period than we see in these data. Second, there is a real challenge here for the change theorists.

Put baldly, since many of these changes go in opposite directions simultaneously, it is doubtful that any single variable ("age of information", "becoming a service society", "waxing and waning of the cold war", "stalled economic growth", etc. etc.) can account for any big chunk of the 42 statistical patterns.

Cohort Replacement:

To find the contribution of cohort replacement, I simply subtracted the intra-cohort shift Q (row II in Appendix 2) from the total change Q (Row I in Appendix 2). The results appear in row III. The justification:

Assuming a three variable system ...

Period --> Cohort --> Dependent Variable

...if we were working with linear regression, total change (Period/Dependent bivariate) would equal (1) the coefficient for Period/Dependent net of Cohort plus (2) the product of Period/Cohort and Cohort/Dependent net of Period. Q's do not add up exactly, but logically any difference between the intra-cohort Q and the bivariate must be due to Period/Cohort and Cohort/Dependent - i.e. to a change in cohort composition when cohorts differ on the dependent variable, that is, it must be due to cohort replacement⁹.

Consider our sample item, SPKCOM, from Period 1 to Period 2. There was a total change of -.015 and an intra-cohort coefficient of -.080. Subtracting -.080 from -.015 gives +.065. Cohort replacement contributed a liberal boost of +.065 so the total conservative shift was a trivial -.015. In other words, the conversion effect of -.080 was just about canceled out by a replacement effect of +.065.

Table 12 summarizes.

(Table 12 here)

These coefficients are:

- ...almost entirely positive (88% of the 162 coefficients in the table)
- ...small for adjacent periods (only 13 out of 123 [11%] exceed .079)¹⁰
- ..."never" importantly negative (the table has zero negative coefficients of -.080 or stronger.)
- ...homogeneous in size (standard deviations of .02 to .03)

By comparison, the intra-cohort coefficients were:

- ...almost evenly split between positive and negative (Table 10)

- ...occasionally sizeable (44% are statistically reliable, which generally means a Q of .08 or larger - Table 10)
- ...often importantly negative (Table 11)
- ...heterogeneous in size (standard deviations from .10 to .16)

I think we have sighted a tortoise and a hare atop the liberal plateau. Cohort effects are the slow and steady tortoise adding tiny amounts of liberalism year after year, item after item. Intra cohort shifts are the erratic hare, bounding hither and yon and occasionally stopping for a snooze.

Correlation analysis (product moment r s with item Qs as cases and periods as variables) confirms the metaphor:

(Table 13 here)

The replacement effects show a tortoiselike persistence, with most correlations close to .80. A given item tends to have the same magnitude of cohort effect throughout the periods. The intra-cohort Qs show a hare-y inconsistency. The negative correlations in the left hand column say that items that moved in a more conservative direction in the late 70s tended to rebound in a relatively more liberal direction in the early 80s, while the small positive r s in the right hand column say the shifts during the 80s tended to resemble those at the beginning of the decade.

Since the cohort effects, while small, are consistent across items, they cumulate so many items show nontrivial cumulative cohort effects from the early 70s to the late 80s. Table 14 displays them.

(Table 14 here)

While all six groups and all but ten items show definite cohort effects, they are most frequent for Free Speech, Gender, and Race, least frequent for Politics and Religion.

Who won, the steady tortoise or the erratic hare? Table 3 gave away the answer, but Figure 2 shows how it worked.

(Figure 3 here)

On the left side we see the cumulative effects of conversion (black dots, same as in Figures 1 and 2) and Replacement (dotted squares). On the right side we see their sum, the raw data (marginal) change.

For every period and every topic, the replacement effects are positive and similar, so they approximate straight lines. This tells us what we already knew - throughout the 70s

and 80s, replacement (dare I say cohort replacement) led to a steady liberalization of attitudes across the variety of topics here.

Necessarily then, when the raw data trends differ from the cohort effects, the pattern is due to the conversion effects. Again taking a θ magnitude of .08 as notable (though hardly "large"), for:

...the average of all 39 items, the conservative shift of the late 70s barely outweighed the replacement effects, but in the 80s, the replacement effects offset the tiny conversion effects. By the late 1980s, the average item was "notably" more liberal than in the early 70s.

...Race items both effects are cumulatively liberal, producing an impressive gain in liberal attitudes among whites.

...Gender/Sex and Free Speech the cumulative replacement effects more than offset the wishywashy conversion effects so there is a notable liberalization, produced almost entirely by replacement.

...Politics the u-shaped conversion effects dominate the cohort effects so the raw data show a conservative shift in the late 1970s and an eventual return to the levels of the early 70s.

...Religion neither process produces much of anything in any of the periods.

...Crime the cumulative conservative conversion effects easily dominate the weak replacement effects so the raw data are notably less liberal in the late 80s.

Retiring our racers, let us return to the original geological/meteorological metaphor:

On top of the liberal plateau in the 70s and 80s, the weather was changeable: a conservative "cold front" in the late 70s was followed by a liberal "warming trend" in the late 80s. Throughout the period cohort replacement slowly but steadily produced a more liberal ideological climate.

The combined result varied with the topic: Overall, there was more liberalization than not; Race, Gender/Sex, and Free Speech became more liberal over the two decades; Politics and Religion showed no

cumulative net shift; Attitudes toward crime became more conservative.

The Decline of Cohort Effects

While replacement effects were ubiquitous and cumulatively effective, their magnitudes declined steadily, as shown by their means in Table 12.

1972-74 to 1977-80	+ .052
1978-80 to 1982-84	+ .044
1982-84 to 1987-89	+ .028

And the declines are pervasive, as shown in Table 15.

(Table 15 here)

In the first three periods 64% of the items showed a smaller replacement effect in P2/P3 than P1/P2, while in the last three 86% showed smaller cohort effects in P3/P4 compared to P2/P3.

What happened? Either the amount of cohort replacement declined or the association between cohort and attitude declined.

Since cohort replacement is not a single "thing" it is not easy to say whether it is increasing or decreasing. Common sense indices in Table 16 suggest little decrease.

(Table 16 here)

Table 16 does show a steady decline in respondents ages 20-24 (as the baby boomers moved through early adulthood). This should lower replacement via "Newcomers". But it also shows a steady increase in respondents 80 and over, whose high mortality rates should also add to replacement. Since these demographic trends work in opposite directions and all the numbers are small, I am unwilling to blame the decline on sluggish demographic turnover.

There is much more striking evidence for change in the shape of the cohort/dependent variable curves. The idea is best conveyed through our example of SPKCOM. To estimate the relationship between Cohort and Spkcom one should control for period effects, otherwise the means from our youngest cohort will come disproportionately from later periods. Table 5 shows a simple way to do this by taking row differences (remembering the no interaction finding) and assuming the newest cohort ('66) has a score of zero¹¹. Figure 4 graphs the results for SPKCOM.

(Figure 4 here)

At first glance, the function looks impressively linear: the newer the cohort, the greater the tolerance. But if we divide the cohorts into 1896-1946 and 1946-1966, and run separate regressions¹² for each:

...in the older cohorts, the function is positive ($b = +8.8$ percentage points per decade) and quite straight (r square = .98)

...in the younger cohorts, the function is negative ($b = -4.5$ percentage points per decade) and quite straight (r square = .86)

In other words, for cohorts born up to 1946 (or there about) tolerance of communist speech increases with year of birth at the rate of 8.8 percentage points per decade, while for cohorts born after 1946 tolerance decreases with year of birth at the rate of 4.5 percentage points per decade.

Now, let's assume, for the sake of argument, this "hump" is typical. And let's think of time as a window, less wide than Figure 4, moving across the page from left to right as new cohorts enter and older cohorts depart. What would happen? If the GSS has existed prior to 1972, tolerance (holding constant intra-cohort changes and assuming no big changes in the age distribution) would have increased about the same amount year after year as the newcomer cohorts were consistently more liberal and the highest mortality cohorts consistently less liberal. BUT in the GSS years 1972 and after, the increase would slow down since the newcomer cohorts are no longer more tolerant (indeed they are less tolerant) than their predecessors.

Is SPKCOM an isolated case? No. Of 37 items with positive slopes for 1896-1946, 29 or 78% had less positive slopes for 1946-1966. Table 17 tells the same story another way:

(Table 17 here)

Table 17 tells us:

For cohorts born prior to 1946 liberalism increases with year of birth at an average rate of about five points per decade across the spectrum of items.

For cohorts born after 1946 there is no consistent pattern. The later born are just about as likely to be less liberal as more liberal.

Putting it yet another way, only five of forty-two items (NATCITY, GRASS, NATFARE, ATTEND, XMOVIE, BUSING) have post 1946 slopes as positive as the average for all items in the earlier cohorts.

Thus we can expect the majority of the item plots to look quite a bit like Figure 4. (The coefficients for each item are displayed in Appendix 2.) Figure 5 graphs the results by topic. For....

(Figure 5 here)

All items...the curve flattens out after 1946. Post 1941 cohorts are neither systematically more liberal nor systematically more conservative than the pre 1946 respondents.

Free speech...there is a definite droop. Post 1946 cohort are generally less favorable to free speech than their predecessors.

Gender/Sex and Politics...show the general pattern of a flattening after 1946.

Race and Religion...have positive slopes even after 1946, though they are smaller than the slopes for the pre 1946 respondents.

Crime...is an exception. Post 1946 cohorts are more liberal.

If it is no longer true that younger cohorts are persistently more liberal than their predecessors, Figure 5 displays a sociological discovery of considerable importance. Several authors (Alwin 1987, Condran 1979, Corbett 1988, Duncan 1985, Taylor and Smith 1978) have noted it in passing, but there has been no extended discussion.

Testing the finding

Virginia Woolf claimed "In or about December, 1910, human character changed". Ms. Woolf had no data so she could be very specific, but our data do suggest this: for Americans born after the end of World War II, cohort influence on many of their social attitudes changed. Since cohort replacement is a process through which causes operate not a cause, the finding is not self-explanatory. Invocation of historical events (The Tet offensive occurred in 1968 when those born in 1946 were 22 years old) is suggestive but proves little. Explanation requires test variables, not for instances. I have too little space and too few illuminating results to say much, but a few findings may motivate others to pursue the problem.

First, I do not think the finding is an "aging only in the 20s" artifact. It is possible the very youngest adults become more liberal in their twenties and then settle

down. If so, the stability in the later ages might dilute any statistical tests of overall interaction effects. Possibly so, but there is common sense evidence against it. In Period 1 (1972-74) respondents ages 20-29 were consistently more liberal than those 30-39 (92 per cent of the Ds were positive, the mean was +10.0), in Period 4 (1987-89) 59 per cent of the Age 20s v. Age 30s Ds were positive and the mean is 0.0. This is inconsistent with the "aging only in the 20s" hypothesis.

Second, there is something to the simple hypothesis of ceiling effects. If "liberalization" hit a ceiling with the cohort of 1946, the Cohort/Liberalism function would flatten out and produce the shape we have seen. There are seven items where a straight line (that is, projecting the regression in the pre 1946 cohorts) would predict 90 per cent or more liberal for the '66 cohort in Period 4. Assuming "real data" never reach 90 percent, we infer these items hit a ceiling:

ABHLTH	PREMARSX
FEKOME	RACMAR
FEPRES	RACSEG
FEWORK	

In the post World War II generation "nobody", regardless of birth date, accepts gross Sexism, Racism, or abortion fanaticism. The first two rows of Table 18 (below) show the impact of these items. When they are removed the difference in slopes reduces, but only from -3.98 to -3.67.

Educational attainment does have an "Aging only in the 20s" pattern. GSS (and other data sets) show cohorts of young adults increasing their schooling up to around age 30 but not after that. Since Education (a) shows the same "droop" in its Cohort relationship (within a Period) as our typical attitude and (b) is a powerful and general predictor of attitudes, it is a prime candidate for test variable. The bottom line of Table 18 shows what happens when Education (years of schooling, 0 through 20) is introduced into the regressions. The liberalism of the "pre 46 slopes" decreases and the liberalism of the "post 46 slopes) increases. Necessarily their difference is reduced (from -3.67 to -1.78). Net of Education a "decade of pre 1946 Cohort" increased liberalism about 3 points, while a decade of post 1946 cohort increased it only about 1 point.

One number in Table 18 pulls the entire argument together: Even after

ceiling effect items are removed and the curvilinear effect of Age on Education is controlled, pre and post 1946 Cohort/Attitude slopes are essentially unrelated ($r = -.225$). Yes, Virginia, something happened to social change in or about 1946.

(Table 18 here)

What about the future? Assuming the statistical properties of the system do not change radically in the near future we can predict:

(1) Cohort replacement will exert a broad and persistent liberalizing effect on American opinions for years to come.

While the most recent cohorts are no more liberal than their immediate predecessors, they are more liberal than the generality of American adults. Consider our example, SPKCOM. Among 20-24 year olds in the late 80s, 67 per cent were "liberal", definitely lower than the 73 per cent among those ages 35-39. But the overall average (marginal) was 61 per cent. Consequently, the arrival of these newcomers had a positive (liberal) effect on the total distribution. There are only three items where the 20-24 year olds in 1987-89 were less liberal than the total sample: CHLDIDEL (55% v 57%), NATEDUC (61% v. 65%) and SPKCRAC (56% v. 63%).

(2) Period (intra-cohort) changes will increasingly drive marginal trends.

As the magnitudes of the cohort replacement effects decline, their contribution to the total (marginal) trend will decrease, while the relative contribution of period effects will increase. Since the period effects seem to be mixed in sign (both conservative and liberal) and noncumulative, we should see more short run changes in marginals (not necessarily big ones) and less of an overall liberal cast to them.

Conclusions

In terms of attitude trends:

(1) There is no support here for a major conservative shift in Americans' attitudes and opinions. The overall trend is slightly liberal, the intra-cohort trends are as often liberal as conservative, and even the much maligned youngest generation is not very conservative. It is merely no more liberal (or conservative) than its immediate predecessors.

(2) There was a discernable shift to the right in the late 1970s, apparently led by positions on international affairs.

(3) While cohort effects are broadly liberal, intra-cohort ones are topic specific. RACE relations showed a strikingly liberal movement throughout; CRIME showed a strikingly conservative one.

(4) The Stoufferian prediction - liberalization through cohort replacement - fits the 1972-1989 facts very well.

(5) The data reveal an historic decline in the cohort/liberalism correlation. The decline is only partially accounted for by ceiling effects and the Age/Education correlation among youngest adults. The broad implication is that the content of the "modernization process" shifted after World War II. The narrow implication is that the impact of Stoufferian Cohort Replacement will decline but slowly.

In terms of social research:

The Stoufferian framework continues to be rewarding, if we do not take it literally (e.g. Stouffer assumed all intra-cohort shifts were negative and due to aging). Of all the exogenous variables of sociological interest, Cohort replacement shows the greatest rate of change in the GSS and tiny changes in exogenous variables will not explain larger ones in endogenous variables. The wide range of variables showing these effects and the typical inconsistency in sign and size of intra-cohort and replacement effects mean marginal trends should never be taken at face value, while Age/Period/Cohort analysis will generally turn up something. Granted methodological problems; common sense, conservative interpretation and outside information give us protection against totally unwarranted conclusions. Like the notion of causation, the APC framework, while metaphysically shaky, seems to be not only profitable but indispensable when studying attitude trends.

Appendix 1: 42 "Liberal/Conservative" GSS Items

<u>Mnemonic</u>	<u>Question/Page</u>	<u>Content*</u>	<u>N</u>	<u>P1</u>	<u>P4</u>	<u>Yule's Q</u>
ABHLTH	206c/248 (#6)	Should abortion be legal if mother's health is endangered? + = 1 = Yes - = 2 = No	16,252	90	89	-.08
ABSINGLE	206f/249 (#6)	Should abortion be legal if woman is not married and does not want to marry the man? + = 1 = Yes - = 2 = No	15,979	48	42	-.10
ATTEND	105/142 (#5)	Frequency of attending religious services + = 0-4 = Monthly or less - = 5-8 = More than monthly	17,679	53	57	+.07
BUSING	134A/184 (#4)	Favor busing Negro/Black and white school children from one district another? + = 1 = Favor - = 2 = Oppose	9,380	14	28	+.41
CAPPUN	86/128 (#1)	Death penalty for murderers + = 2,8 = No, Don't know - = 1 = Yes	14,659	37	28	-.19
CHLDIDEL	211/253 (#6)	Ideal number of children + = 0-2 = < 3 - = 3-8 = more	10,671	46	57	+22

COMMUN	101/136	(#3) Communist form of government	12,095 54 49	-.10
		+ = 2,3,4,8 = other		
		- = 1 = Worst kind of all		
COURTS	90/131	(#1) Harshness of local courts	15,280 21 14	-.24
		+ = 1,3 = About right, Too harsh		
		- = 2 = Not harshly enough		
FEHOME	198/243	(#6) Women should...Leave running the country up to men	12,335 62 75	+.30
		+ = 2 = Disagree		
		- = 1,8 = Agree, Not sure		
FEPRES	200/244	(#6) Would you vote for a woman for President?	13,907 74 84	+.30
		+ = 1 = Yes		
		- = 2,5,8 = No, Don't Know, Wouldn't Vote		
FEWORK	199/243	(#6) Approve of a married woman earning money if she has a husband capable of supporting her?	9,495 65 78	+.31
		+ = 1 = Approve		
		- = 2,8 = Disapprove, Don't know		
FUND	105/142	(#5) Fundamentalism/Liberalism of Respondent's Religion	17,321 71 68	-.11
		+ = 2,3 = Moderate, liberal		
		- = 1 = Fundamentalist		
GRASS	95/134	(#1) Use of marijuana should be made legal?	10,769 20 20	.00

+ = 1,8 = Should, Don't Know

- = 2 = Should not

HOMOSEX	219/258	(#6) Wrongness of homosexuality	12,082	31	27	-.11
		+ = 2,3,4,5,8 = other				
		- = 1 = Always wrong				
LETDIE1	227/262	(#5) Euthanasia for a person with an incurable disease?	7,580	na	69	na
		+ = 1 = Yes				
		- = 2 = No				
LIBATH	79c/124	(#2) Favor removing a book against religion from public library?	13,681	60	66	+.12
		+ = 2 = Not favor				
		- = 1,8 = Favor, Don't know				
LIBCOM	82c/126	(#2) Favor removing a communist's book from public library?	13,659	56	61	+.09
		+ = 2 = Not favor				
		- = 1,8 = Favor, Don't know				
LIBHOMO	84c/127	(#2) Favor removing a homosexual's book from public library?	12,101	54	60	+.12
		+ = 2 = Not favor				
		- = 1,8 = Favor, Don't know				
NATARMS	69I/106	(#3) Spending on the military	12,704	86	85	-.04
		+ = 2,3,8 = About right, Too much, Don't Know				
		- = 1 = Too little				
NATCITY	69D/105	(#3) Spending on big cities	12,705	49	44	-.10

+ = 1 = Too little
 - = 2,3,8 = About right, Too
 much, Don't Know

NATCRIME 69E/105 (#3) Halting rising crime rate 12,690 34 30 -.10

+ = 2,3,8 = About right, Too
 much, Don't Know
 - = 1 = Too little

NATDRUG 69F/105 (#3) Dealing with drug addiction 12,690 37 31 -.14

+ = 2,3,8 = About right, Too
 much, Don't Know
 - = 1 = Too little

NATEDUC 69G/105 (#3) Improving nation's 12,706 50 65 +.30

educational system
 + = 1 = Too little
 - = 2,3,8 = About right, Too
 much, Don't Know

NATENVIR 69B/104 (#3) Improving and protecting 12,706 60 68 +.17

the environment
 + = 1 = Too little
 - = 2,3,8 = About right, Too
 much, Don't Know

NATFARE 69K/106 (#3) Spending on welfare 12,703 21 22 +.04

+ = 1 = Too Little
 - = 2,3,8 = About right, Too
 much, Don't know

NATHEAL 69C/104 (#3) Spending on Health 12,715 63 67 +.10

+ = 1 = Too Little

- = 2,3,8 = About right, Too
much, Don't Know

NATRACE 69H/106 (#3) Improving the condition of Blacks 12,700 32 34 +.04

+ = 1 = Too Little

- = 2,3,8 = About right, Too
much, Don't Know

PARTYIDb 61/95 (#3) Usually think of self as Republican, Democrat, Independent 15,291 65 56 -.19

or what?

+ = 0-2 = Democrat

- = 4-6 = Republican

POLVIEWsb 68a/102 (#3) Where would you place yourself on this scale? 8,043 50 46 -.09

+ = 1-3 = Liberal

- = 4-6 = Conservative

PORNLAw 217/257 (#2) Feelings about pornography laws 10,629 57 58 +.03

+ = 2,3 = Legal for Adults,
Legal for all

- = 1 = Illegal

POSTLIFE 108/144 (#5) Believe in life after death? 11,235 30 28 -.04

+ = 2,8 = No, Undecided

- = 1 = Yes

PREMARsX 217/257 (#6) Wrongness of sex relations before marriage 10,935 66 73 +.18

+ = 2,3,4,8 = other

- = 1 = Always wrong

RACMAR	125a/177	(#4) Laws against marriages between Blacks and whites (white respondents only)	12,032 61 73 +.26
		+ = 2 = No	
		- = 1,8 = Yes, Don't Know	
RACOPEN	128/180	(#4) Preference in open housing referendum (white respondents only)	9,421 34 53 +.30
		+ = 2 = nondiscrimination	
		- = 1,8 = owner decides, Don't Know	
RACSEG	127b/179	(#4) Whites have right to keep blacks out of their neighborhoods (white respondents only)	9,500 55 74 +.39
		+ = 3,4 = Disagree	
		- = 1,2,8 = Agree, No Opinion	
RELITEN	107/144	(#5) Would you call your self a _____ (religious preference)?	14,347 60 62 +.04
		+ = 2,3,8 = Not very strong, Somewhat strong, Don't know	
		+ = None (=4) on RELIG	
		- = 1 = Strong	
SPKATH	79a/123	(#2) Allow speech by person against churches and religion?	13,698 64 70 +.14
		+ = 1 = Yes, allow	
		- = 2,8 = No, Don't Know	

SPKCOM 82a/126 (#2) Allow speech by an admitted 13,688 56 61 +.11
 communist?
 + = 1 = Yes, allow
 - = 2,8 = No, Don't Know

SPKHOMO 84a/127 (#2) Allow speech by an admitted 12,111 61 71 +.21
 homosexual?
 + = 1 = Yes, allow
 - = 2,8 = No, Don't Know

SPKRAC 81A/125 (#2) Allow speech by a racist? 7,945 na 63 na
 + = 1 = Yes, allow
 - = 2,8 = No, Don't Know

SUICIDE1 228A/263 (#5) A right to die if incurable 7,938 na 48 na
 disease?
 + = 1 = Yes
 - = 2,8 = No, Don't Know

XMOVIE 222/260 (#6) Seen X-rated movie in the 10,753 25 26 +.03
 last year?
 + = 1 = Yes
 - = 2 = No

Question/Page = Question number and page in 1990 GSS codebook

N = Total number cases analyzed

P1 and P4 = Percentage + in Period 1 (72-74) and Period 4 (87-89)

Yule's Q = Yule's Q for P4 v. P1

#=content classification (#1=Crime, #2=Free Speech, #3=Politics, #4=Race

#5=Religion, #6=Gender/Sex)

APPENDIX 2: Results

Mnemonic	b= 96-46	46-66		P1P2	P2P3	P3P4	P1P4
ABHLTH	+1.82	+1.06	I	.000	.000	-.080	-.080
rsq=	.83	.75	II	-.035n	-.055n	-.100*	-.188
			III	+.035	+.055	+.020	+.108
ABSINGLE	+2.38	-3.74	I	-.025	-.040	-.040	-.105
rsq=	.72	.73	II	-.025n	-.050?	-.045n	-.119
			III	.000	+.010	+.005	+.014
ATTEND	+2.35	+6.16	I	+.045	-.020	+.045	+.070
rsq=	.73	.98	II	.000n	-.070*	+.010n	-.060
			III	+.045	-.050	+.035	+.130
BUSING	+0.48	+9.24	I	+.045	+.110	+.278	+.414
rsq=	.14	.96	II	+.010n	+.055n	+.226*	+.287
			III	+.035	+.055	+.052	+.127
CAPPUN	-1.19	+3.36	I	-.080	-.134	+.025	-.188
rsq=	.56	.80	II	-.080*	-.134*	+.025n	-.188
			III	.000	.000	.000	.000
CHLDIDEL	+5.74	-7.16	I	+.134	+.090	-.005	+.217
rsq=	.91	.95	II	+.100*	+.070*	-.020n	+.149
			III	+.034	+.020	+.015	+.068
COMMUN	+3.43	+3.16	I	-.178	-.095	+.173	-.100
rsq=	.83	.99	II	-.226*	-.139*	+.149*	-.217
			III	+.048	+.044	+.024	+.117
COURTS	+0.17	+4.50	I	-.358	+.045	+.085	-.240

	rsq=	.03	.94	I	-.426*	-.005n	+.075?	-.367
				III	+.068	+.050	+.010	+.127
FEHOME		+9.44	+1.72	I	+.010	+.221	+.075	+.300
	rsq=	.98	.77	I	-.070?	+.178*	.000n	+.100
				III	+.080	+.043	+.075	+.190
FEPRES		+7.08	-0.50	I	+.119	+.129	+.055	+.296
	rsq=	.94	.13	I	+.040n	+.085*	-.005n	+.119
				III	+.079	+.044	+.060	+.177
FEWORK		+9.51	-0.68	I	+.075	+.154	+.090	+.310
	rsq=	.93	.08	I	+.005n	+.100*	+.040n	+.144
				III	+.070	+.054	+.050	+.166
FUND		-1.10	-3.88	I	-.040	+.010	-.080	-.110
	rsq=	.46	.74	I	-.035n	+.025n	-.050?	-.060
				III	-.005	-.015	-.030	-.050
GRASS		+2.80	+5.22	I	+.264	-.124	-.149	-.005
	rsq=	.70	.89	I	+.183*	-.202*	-.197*	-.217
				III	+.081	+.078	+.048	+.212
HOMOSEX		+4.96	-2.02	I	-.020	-.020	-.075	-.114
	rsq=	.91	.46	I	-.065?	-.065?	-.095*	-.221
				III	+.045	+.045	+.020	+.107
LETDIE1		+3.88	+3.38	I	na	+.080	+.090	na
	rsq=	.67	.60	I	na	+.035n	+.055n	na
				III	na	+.045	+.035	na
LIBATH		+8.85	-4.16	I	+.005	+.050	+.080	+.124
	rsq=	.97	.95	I	-.080*	-.010n	+.050n	-.040

			111	+.085	+.060	+.030	+.164
LIBCOM	+9.05	-2.38	I	-.005	+.045	+.050	+.090
rsq=	.98	.93	<u>II</u>	<u>-.075*</u>	<u>-.015n</u>	<u>.000n</u>	<u>-.090</u>
			111	+.070	+.060	+.050	+.180
LIBHOMO	+10.37	-4.50	I	+.045	+.030	+.050	+.124
rsq=	.97	.87	<u>II</u>	<u>-.020n</u>	<u>-.030n</u>	<u>+.010n</u>	<u>-.040</u>
			111	+.065	+.060	+.040	+.164
NATARMS	+2.30	+3.18	I	-.544	+.235	+.319	-.040
rsq=	.80	.86	<u>II</u>	<u>-.572*</u>	<u>+.217*</u>	<u>+.305*</u>	<u>-.114</u>
			111	+.028	+.018	+.014	+.074
NATCITY	+4.32	+5.20	I	-.188	+.055	+.040	-.095
rsq=	.95	.83	<u>II</u>	<u>-.245*</u>	<u>-.015n</u>	<u>-.005n</u>	<u>-.264</u>
			111	+.057	-.010	-.005	-.015
NATCRIME	-1.69	-0.06	I	-.015	-.065	-.025	-.105
rsq=	.45	.00	<u>II</u>	<u>-.015n</u>	<u>-.055?</u>	<u>-.020n</u>	<u>-.090</u>
			111	.000	-.010	-.005	-.015
NATDRUG	-1.29	+2.34	I	+.139	-.045	-.207	-.144
rsq=	.62	.58	<u>II</u>	<u>+.139*</u>	<u>-.060*</u>	<u>-.226*</u>	<u>-.149</u>
			111	.000	+.015	+.019	+.035
NATEDUC	+5.89	-6.96	I	+.020	+.159	+.129	+.300
rsq=	.98	.69	<u>II</u>	<u>-.020n</u>	<u>+.119*</u>	<u>+.124*</u>	<u>+.221</u>
			111	+.040	+.040	+.005	+.079
NATENVIR	+6.63	+4.98	I	-.217	+.075	+.305	+.168
rsq=	.95	.86	<u>II</u>	<u>-.310*</u>	<u>.000n</u>	<u>+.278*</u>	<u>-.035</u>
			111	+.093	+.075	+.027	+.203

NATFARE	+0.29	+6.10	I	-.291	+.287	+.040	+.035
rsq=	.14	.98		<u>II</u>	<u>-.350*</u>	<u>+.259*</u>	<u>+.015n</u>
			III	+0.059	+0.028	+0.025	+.120
NATHEAL	+4.65	-3.70	I	-.144	+.030	+.217	+.105
rsq=	.91	.69		<u>II</u>	<u>-.164*</u>	<u>+.030n</u>	<u>+.221*</u>
			III	+0.020	.000	-.004	+.015
NATRACE	+2.30	+3.22	I	-.188	+.134	+.100	+.045
rsq=	.95	.44		<u>II</u>	<u>-.231*</u>	<u>+.100*</u>	<u>+.075?</u>
			III	+0.043	+0.034	+0.025	+.105
PARTYID	+3.05	-4.80	I	-.035	-.050	-.105	-.188
rsq=	.70	.67		<u>II</u>	<u>-.040n</u>	<u>-.055?</u>	<u>-.100*</u>
			III	+0.005	+0.005	-.005	+.005
POLVIEWS	+3.83	+2.58	I	-.110	-.060	+.080	-.090
rsq=	.70	.32		<u>II</u>	<u>-.193*</u>	<u>-.114*</u>	<u>+.045n</u>
			III	+0.083	+0.054	+0.035	+.169
PORNLAW	+8.04	+4.64	I	+0.005	+0.030	.000	+.035
rsq=	.91	.98		<u>II</u>	<u>-.100*</u>	<u>-.075*</u>	<u>-.065?</u>
			III	+0.105	+0.105	+0.065	+.270
POSTLIFE	-1.06	+3.64	I	-.025	+.025	-.035	-.035
rsq=	.53	.93		<u>II</u>	<u>-.055n</u>	<u>+.025n</u>	<u>-.035n</u>
			III	+0.030	.000	.000	+.030
PREMARSX	+7.68	+2.12	I	+0.100	+0.055	+0.025	+.178
rsq=	.96	.33		<u>II</u>	<u>.000n</u>	<u>-.030n</u>	<u>-.035n</u>
			III	+0.100	+0.085	+0.060	+.243

RACMAR	+9.67	-0.20	I	+ .164	- .015	+ .119	+ .264
rsq=	.99	.01	II	<u>+ .100*</u>	<u>- .114*</u>	<u>+ .080*</u>	<u>+ .065</u>
			III	+ .064	+ .099	+ .039	+ .199
RACOPEM	+4.92	+2.60	I	+ .085	+ .183	+ .119	+ .371
rsq=	.88	.56	II	<u>+ .025n</u>	<u>+ .114*</u>	<u>+ .090*</u>	<u>+ .226</u>
			III	+ .060	+ .069	+ .029	+ .145
RACSEG	+6.50	+0.54	I	+ .095	+ .221	+ .095	+ .392
rsq=	.96	.02	II	<u>+ .045n</u>	<u>+ .164*</u>	<u>+ .065?</u>	<u>+ .268</u>
			III	+ .050	+ .057	+ .030	+ .124
RELITEN	+5.19	+4.22	I	+ .040	- .085	+ .090	+ .045
rsq=	.90	.97	II	<u>- .015n</u>	<u>- .139*</u>	<u>+ .045?</u>	<u>- .110</u>
			III	+ .055	+ .054*	+ .045	+ .155
SPKATH	+10.16	-4.92	I	+ .005	+ .050	+ .090	+ .144
rsq=	.98	.95	II	<u>- .085*</u>	<u>- .005n</u>	<u>+ .050n</u>	<u>- .040</u>
			III	+ .090	+ .055	+ .040	+ .184
SPKCOM	+8.82	-4.50	I	- .015	+ .050	+ .075	+ .110
rsq=	.98	.86	II	<u>- .080*</u>	<u>+ .010n</u>	<u>+ .040n</u>	<u>- .030</u>
			III	+ .065	+ .040	+ .035	+ .140
SPKHOMO	+10.77	-5.98	I	+ .050	+ .065	+ .100	+ .211
rsq=	.96	.96	II	<u>- .020n</u>	<u>+ .020n</u>	<u>+ .070?</u>	<u>+ .070</u>
			III	+ .070	+ .045	+ .030	+ .141
SPKRAC	+6.37	-11.84	I	na	- .015	+ .055	na
rsq=	.92	.86	II	<u>na</u>	<u>- .025n</u>	<u>+ .055n</u>	<u>na</u>
			III	na	+ .010	.000	na
SUICIDE1	+4.70	-1.18	I	na	+ .173	+ .045	na

rsq=	.92	.05	<u>II</u>	na	+ .119*	+ .025n	na
			III	na	+ .054	+ .020	na
XMOVIE	+5.38	+8.38	I	-.287	+ .197	+ .124	+ .030
rsq=	.97	.91	<u>II</u>	-.384*	+ .114*	+ .050n	-.235
			III	+ .097	+ .083	+ .074	+ .265

I = bivariate Q, period to period

II = net, intra-cohort Q

III = "cohort effect" = I-II

* = significant at .05, ? = borderline, n= p>.049 (See text footnote 1)

b = raw slope x 10 for regression of dummy variable on cohort in five year categories. See text for explanation.

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1. GSS is a multi-stage (clustered) area probability sample. Consequently, each item has a Design Effect estimating its precision vis a vis a simple random sample (SRS). Design effects, of course, vary item by item, but study of the GSS suggests that the standard rule of thumb, $DEFF=1.5$, is a good approximation. (Actually, Age has a relatively small design effect since households in all neighborhoods tend to have a range of ages, but this is not true for the other items.) In other words, short of working out complex calculations for each variable, a conservative strategy would be to treat GSS Ns as "worth" $.67N$. Thus, for Chi Square tests, I worked out CN (Hoelster 1983), the sample size required to make the difference just exactly significant at the .05 level. When CN/N is less than .67, the effect would still be significant if the Design Effect were 1.5 or less. Following this convention, throughout this paper I have treated a difference as (1) insignificant if $p > .049$ SRS, 2) significant if $p < .05$ and $CN/N < .67$ and 3) borderline in all other cases. The reader should bear in mind the sample sizes here are so large any difference that appears nontrivial (and some that appear trivial) will be statistically reliable. The conclusions hinge on consistency of results across the 42 items, not statistical significance per se.

2. Analysts of Race attitudes distinguish between items about abstract principles and items about "implementation". Three of the five race items treat implementation (BUSING, NATRACE, RACOPEN). All three show liberal trends.

3. These are net changes. We have no idea how many shifted which way, but the figures tell us the conservative shifts outnumbered liberal shifts in the 70s, the opposite occurred between the late 70s and early 80s, and during the eighties equal proportions shifted each way.

4. All "log linear" calculations were done with the PC program MICLOG. Miclog reports its results as log odds. To get Qs I used a pocket calculator to find antilogs (odds) and transformed them to Qs with the standard formula $Q = \text{odds} - 1 / \text{odds} + 1$.

5. Of course, not all 80 year olds die within five years. However, mortality tables suggest that about thirty percent do, and their numbers are so small to begin with (2 to 3 per cent of the cases in each period), little is lost by this oversimplification. On the technical side, one might use a fancier program that allowed zero cells for the non-spanners. The

substantive conclusions would come out the same, but one would not get separate tests for each pair of periods.

6. I chose six items with the largest cohort effects (explained later), GRASS, NATENVIR, PORNLAW, PREMARSX, RACMAR, and XMOVIE. First, I divided the 13 age categories into equal halves and calculated partial d's using dichotomous controls. Then I divided each half in half and calculated partial d's using four control categories. Finally, I did the same thing with eight categories. Since later cohorts are more liberal, cohort tends to make time associations more positive. When cohort is controlled, the partial associations between Period and the Dependent variable should be less positive. If Firebaugh's criticism is correct, increasingly finer controls should make partials less positive (more negative). This did happen. For example, with PORNLAW for Periods 3-4, the partial d with a dichotomy control was -2.6, with four control categories the partial was -2.8 (0.2 points more negative) and with eight control categories the d was -3.0, another 0.2 change. Averaged over six items and three times, however, moving from two to four categories produced a mean decrease of 0.2 (as in PORNLAW), while moving from four to eight produced a mean decrease of just .002.

7. To pile it on: the 18 "possibles" included 15 items, of which, 12 reached borderline significance in only one of the three period adjacencies, two in two periods, and one in all three. But the items that showed suggestions of interactions more than once did not show consistent patterns of their residuals across periods. In sum, of the 42 items, not one showed persistent, much less significant, patterns of residuals from the no interaction model.

8. A Period1 to Period4 intra-cohort change table would lose a lot of cases because of nonspanning cohorts. To get around this I found the cumulative coefficient by summing across the three shift Qs. My statistical program reported them as log odds. To cumulate, I summed the three log odds, found the antilog, and transformed the antilog to Q. Inspection of the original coefficients showed a Q magnitude of .08 to be a very good proxy for the .05 level of significance. It is not a very demanding criterion as it corresponds roughly to a percentage difference of four and thus somewhat less than one point per year.

9. Logically, this is just the special case of algebraic decomposition (Firebaugh 1989, pp. 247-251) where there are no interactions. When the assumption is valid, all the various

"decompositions" will get the same answers as this simple subtraction because there are no weights for the cohorts. As Firebaugh notes it assigns everything involving nonspanning cohorts to replacement, which doesn't trouble me as much as it troubles Firebaugh - but I am following his advice to analyze successive small time intervals.

10. Since the numbers here reflect products of coefficients or two step paths, not net coefficients for Cohort/Dependent, simple significance tests are inappropriate. Using .08 as a cutting point, however, makes this part of the analysis comparable to the previous section. Furthermore, in regression analysis of year and cohort, the coefficient for Year and Year of Birth is close to 1.000 in the GSS. (Interesting in itself, since it challenges the myth of a rapidly aging US population). Since $1 \times X = X$, these effects are probably pretty close to the partial effects of Cohort net of year.

11. This procedure is consistent with our tabular approach. However, one would get virtually the same results with regression on the raw data, regressing a dummy dependent variable on Cohort, controlling for YEAR. When one correlates the two kinds of slopes r square equals .943 and a scatter plot shows no outliers. One implication is that the sizes of various cohorts make little contribution to the slopes.

12. One regression will have an N of 11, the other an N of 5. One seldom takes seriously slopes based on such small numbers, but one seldom has sets of small numbers each of which is based on several thousand cases.

Table 1

	<u>Period1</u>	<u>Period2</u>	<u>Period3</u>	<u>Period4</u>
	1972	1977	1982	1987
	1973	1978	1983	1988
	1974	no GSS	1984	1989
		1980		
Mean=	1973	1978.3	1983	1988
Maximum N=	4601	4530	4578	4484

Table 2.

Characteristics of the Periods

<u>Characteristic</u>	<u>Period1</u>	<u>Period2</u>	<u>Period3</u>	<u>Period4</u>
Incumbent president	Nixon/Ford	Carter	Reagan	Reagan/Bush
Socioeconomic Status				
Education=12+ Years (Mnemonic=EDUC)				
	63% *	68 *	73 *	77
Occupational Prestige, Hodge-Segal-Rossi scale (Mnemonic=PRESTIGE)				
47-82 (high)	30% n	31 n	31 *	36
33-46	36 n	36 n	36 n	36
12-32 (low)	35 n	33 n	32 *	28
Changes in Financial Situation (Mnemonic = FINALTER)				
Better	40% n	40 n	39 n	41
Same	42 *	38 *	35 *	41
Worse	19 *	22 *	26 *	18
Better-Worse	+21	+18	+13	+22
Relative Income Self-rating (Mnemonic=FINRELA)				
Above Av.	18% n	20 n	19 n	21
Average	57 *	52 n	50 n	51
Below Av.	24 *	28 ?	30 ?	28
Family				
Marital Status (Mnemonic=MARITAL)				
Single	11% *	14 *	16 ?	18
Married	73 n	63 *	59 *	55
Wid/Sep/Div	16 *	22 *	25 ?	27
% in Labor Force (married women)				
	39% *	47 *	55 *	62
Well Being (self-ratings)				
Happiness (Mnemonic = HAPPY)				
Very Happy	35% n	34 n	33 n	33
Pretty	51 *	54 n	54 *	57

Not Too	14	*	11	n	13	*	10
Health "Excellent" (Mnemonic=HEALTH)							
	68%	n	68	n	68	n	68

* = adjacent percentages statistically significant (.05)

? = adjacent percentages borderline

n = adjacent percentages not significant

(See footnote 1 for details)

Table 3

Distribution (Stem and Leaf) for P1/P4 Qs in Appendix 1

1st digit	2d digit
+.4	1
+.3	000179
+.2	126
+.1	0122478
+.0	3444479
.0	0
-.0	4489
-.1	000011199
-.2	4

Mean = +.071

Number

Median = +.045

+ = 24

Std. Dev. = .176

0 = 1

- = 14

39

3 NA (no Period 1 data)

Items with Q magnitudes >.20

+.41 BUSING

+.39 RACSEG

+.37 RACOPEN

+.31 FEWORK

+.30 FEHOME

+.30 FEPRES

+.26 RACMAR

-.24 COURTS

+ .22 CHLDIDEL

+ .21 SPKHOMO

Table 4

Raw Changes, Early 70s to Late 80s by Topic

<u>Topic</u>	<u>N</u>	<u>-</u>	<u>+</u>	<u>Mean Q</u>
Race	5	0	5	+.297
Free Speech	7	0	7	+.120
Sex/Gender	9	3	6	+.115
Politics	9	5	4	+.011
Religion	4	2	2	-.008
<u>Crime</u>	<u>5</u>	<u>5</u>	<u>0</u>	<u>-.130</u>
Total	39	15	24	Mean=+.063

Table 5

(a) Per Cent Choosing "Allow" on Free Speech for Communists (SPKCOM)

"cohort"		Row diff.**							
72-4	*	72-4	77-80	82-4	87-89	Ns	d	Cum	
	'66				67%		315		0
	'61			62	71	333	375	+4.2	+4.2
	'56		66	63	68	326	399	402	-1.3 +2.9
20-24	'51	72	68	73	73	521	339	336	405 +5.4 +8.3
25-29	'46	74	71	73	70	545	346	300	323 +0.9 +9.2
30-34	'41	61	59	63	66	443	276	236	280 -10.3 -1.1
35-39	'36	65	55	59	55	414	238	190	213 -2.6 -3.7
40-44	'31	64	59	53	60	362	226	168	183 +0.4 -3.3
45-49	'26	54	56	49	46	417	224	221	219 -8.1 -11.4
50-54	'21	54	49	49	51	393	255	192	222 -0.2 -11.6
55-59	'16	47	42	42	43	371	191	184	176 -7.6 -19.2
60-64	'11	36	34	43	36	307	198	141	156 -7.1 -26.3
65-69	'06	38	36	29	31	279	142	99	118 -1.9 -28.2
70-74	'01	29	31	31		226	85	101	
75-79	'96	30	24			127	71		
80+ older		27				79			
Total		56%	55%	58%	61%	4484	2917	2900	3287

* Birth year for median in age group in median year of period

** Variance weighted difference between adjacent rows ("partial d")

Table 6

Intra-cohort changes in Table 5 (Yule's Q)

Cohort	From To	Periods		
		72-74 77-80	77-80 82-84	82-84 87-89
61				+.211
56			-.065	+.114
51		-.110	+.119	+.005
46		-.095	+.045	-.060
41		-.050	+.095	+.065
36		-.202	+.080	-.080
31		-.105	-.119	+.134
26		+.050	-.149	-.065
21		-.095	.000	+.080
16		-.095	.000	+.025
11		-.060	+.183	-.139
06		-.050	-.149	+.050
01		+.035	.000	
96		-.149		
Average		-.077	+.003	+.028

Table 7.

Interactions in Table 5

Fit for Model (Cohort,Period)(Cohort,Spkcom)(Period,Spkcom)

	P1-P2	P2-P3	P3-P4
Chi. sq.	6.1	12.3	13.1
df	11	11	11
prob.	.864	.342	.284
N	6996	5413	5871
CN	22565	8659	8814
CN/N	3.2	1.6	1.5
BIC	-91.3	-82.3	-82.4
Decision	n	n	n

See Note 1 for explanation.

Table 8

Fitted Data for Models in Table 6

Cohort	Percent Liberal					Percentage Difference				
	P1	P2	P2	P3	P3	P4	P2-P1	P3-P2	P4-P3	
61					66.1	67.7%			+1.6	
56			64.1	64.5	64.7	66.4		+0.4	+1.7	
51	71.8	68.4	69.9	70.3	71.9	73.4	-3.4	+0.4	+1.5	
46	74.3	71.1	71.5	71.9	70.6	72.2	-3.2	+0.4	+1.6	
41	61.7	57.8	60.6	61.0	63.8	65.6	-3.9	+0.4	+1.8	
36	62.6	58.7	56.6	57.0	55.8	57.7	-3.9	+0.4	+1.9	
31	63.4	59.5	56.2	56.6	55.4	57.3	-3.9	+0.4	+1.9	
26	56.0	52.0	52.4	52.8	46.3	48.2	-4.0	+0.4	+1.9	
21	53.9	49.8	49.2	49.7	49.2	51.1	-4.1	+0.5	+1.9	
16	46.4	42.4	41.7	42.1	41.6	43.4	-4.0	+0.4	+1.8	
11	36.9	33.2	37.3	37.7	38.1	39.9	-3.7	+0.4	+1.8	
06	38.9	35.0	33.0	33.4	29.6	31.1	-3.9	+0.4	+1.5	
01	30.5	27.2	30.4	30.8			-3.3	+0.4		
96	28.9	25.7					-3.2			
Q =								-.080	+.010	+.040

Table 9
Significance of Intra-Cohort Shifts for SPKCOM

	P1-P2	P2-P3	P3-P4
Q	-.080	+.010	+.040
N	6996	5413	5871
Chi Sq.	9.9	0.1	1.9
d.f.	1	1	1
prob.	.002	.760	.171
CN	2714	207913	11868
CN/N	.39	38.4	2.0
BIC	+1.05	-8.50	-6.78
Decision	*	n	n

See Note 1 for explanation.

Table 10.
Distribution of Intra-Cohort Net Shift Qs in Appendix 2
Periods

	72-74	77-80	82-84	
	77-80	82-84	87-89	Total
Sign				
+	9	19	26	54
0	2	1	2	5
-	<u>28</u>	<u>22</u>	<u>14</u>	<u>64</u>
Total	39	42	42	123
Significance				
Yes +	10%	29	19	20
other	49	50	69	56
yes -	<u>41</u>	<u>21</u>	<u>12</u>	<u>24</u>
Total	100%	100%	100%	100%
Means				
All	-.086	+.009	+.030	- .054
Topic				
Race	-.010	+.064	+.107	+.157
Gender/Sex	-.048	+.039	-.023	-.034
Speech	-.066	-.016	+.026	-.058
Religion*	-.026	-.040	-.008	-.074
Politics	-.236	+.034	+.115	-.095
Crime	-.040	-.091	-.069	-.202

* Suicide1 and Letdie1 excluded because na in Period 1

Table 11.
 Period to Period and Cumulative Intra Cohort Shifts
 of .08 or stronger by item and topic

Topic\Item	P1-P2	P2-P3	P3-P4	Cum.	P1-P2	P2-P3	P3-P4	Cum.
Race				Free Speech				
BUSING		+.23	+.29		PORNLOW	-.10		-.24
RACSEG		+.16		+.27	LIBCOM			-.09
RACOPEN		+.11	+.09	+.23	SPKRAC	NA		NA
RACMAR	+.10	-.11	+.08		LIBHOMO			
NATRACE	-.23	+.10			SPKHOMO			
Gender				LIBATH				
CHLDIDEL	+.10			+.15	SPKCOM	-.08		
FEWORK		+.10		+.14	SPKATH	-.08		
FEPRES		+.08		+.12	Politics			
FEHOME		+.18		+.11	NATEDUC	+.12	+.12	+.22
PREMARSX					NATHEAL	-.16	+.22	+.09
ABSINGLE				-.12	NATENVIR	-.31	+.28	
ABRLTH			-.10	-.19	NATFARE	-.35	+.26	-.08
HOMOSEX			-.10	-.22	NATARMS	-.57	+.22	+.30
XMOVIE	-.38	+.11		-.24	PARTYID			-.10
Religion				COMMUN				
SUICIDE1	NA	+.12		NA	POLVIEWS	-.19	-.11	-.26
LETDIE1	NA			NA	NATCITY	-.24		-.26
ATTEND				Crime				
FUND					NATCRIME			-.09
POSTLIFE					NATDRUG	+.14		-.23
RELITEN		-.14		-.11	CAPPUN	-.08	-.13	-.19
					GRASS	+.18	-.20	-.20
					COURTS	-.43		-.37

Table 12
Distribution of Cohort Replacement Effects in Appendix 2

	Periods			
	1 to 2	2 to 3	3 to 4	1 to 4
N	39	42	42	39
Sign				
Size				
+				
>.079	9	4	0	29
<.080	25	33	35	7
0				
	4	3	3	1
-				
>-.080	1	2	4	2
<-.079	0	0	0	0
median	+.057	+.048	+.029	+.130
mean	+.052	+.044	+.028	+.124
sigma	.031	.029	.023	.078

Table 13.

Correlations Among Period to Period Changes Across Items

	Period1-Period2		Period2-Period3	
	Period2-Period3		Period3-Period4	
	Conv.*	Repl.**	Conv.*	Repl.**
All items (N=39, 42)	-.36		+.38	
		+.84		+.79
By topic				
Crime	-.67		+.47	
		+.96		+.87
Free Speech	+.39		+.86	
		+.86		+.93
Gender/Sex	-.22		+.83	
		+.83		+.68
Politics	-.49		+.24	
		+.86		+.84
Race	-.37		-.09	
		+.78		+.28
Religion	-.76		-.22	
		+.91		+.93

* = product moment correlation for adjacent conversion (intra cohort) Qs

** = correlation for adjacent replacement Qs

Table 14
 Items With Cumulative (Period 1 to Period 4) Cohort
 Effects of .08 or Larger

Free Speech (mean = +.18)	Crime (mean = .11)
PORNLOW .27	GRASS .21
SPKATH .18	COURTS .13
LIBCOM .18	
LIBHOMO .18	<.08=3
LIBATH .16	
SPKHOMO .14	Politics (mean = +.09)
SPKCOM .14	NATENVIR .20
na=1	NATCITY .17
	POLVIEWS .17
Gender/Sex (mean = +.15)	NATFARE .12
XMOVIE .26	COMMUN .12
PREMARSX .24	NATEDUC .08
FEHOME .19	
FEPRES .18	<.08=3
FEWORK .17	
ABHLTH .11	Religion (mean = +.07)
HOMOSEX .11	RELITEN .16
	ATTEND .13
<.08=2	
	<.08=2
	NA=2
Race (mean = +.15)	
RACMAR .20	
RACOPEN .14	
BUSING .13	
NATRACE .11	
RACSEG .12	

Table 15

Changes in Replacement Effects Across Items

Cohort effect	P2 to P3	P3 to P4
	v. P1 to P2	P2 to P3
2d stronger	10	4
same	4	2
2d weaker	<u>25=64%</u>	<u>36=86%</u>
Total items	<u>39</u>	<u>42</u>

Table 16

NonSpanning Cohorts in Various Periods

<u>Percent</u>	<u>1972-74</u>	<u>1978-80</u>	<u>1980-84</u>	<u>1987-89</u>
Age 20-24	11.6%	11.3%	10.4%	9.3%
change		-0.3	-0.9	-1.1
Age 80+	1.8%	2.6%	3.3%	3.4%
change		+0.8	+0.7	+0.1

Table 17

Distribution of Slopes for pre 1946 and post 1946 cohorts

1946-1946		1946-1966
8 4 2	+10.	
7 5 4 0	9.	2
9 8 0	8.	4
7 1	7.	
6 5 4	6.	1 2
9 7 4 2 0	5.	0 2 2
9 7 7 3	4.	2 5 6
9 8 4 1	3.	2 2 2 4 4 6
8 4 3 3 3	2.	1 3 6 6
8	1.	1 7
5 3 2	+0.	5
	-0.	1 2 5 7
7 3 2 1 1	1.	2
	2.	0 4
	3.	7 7 9
	4.	2 5 5 8 9
	5.	
	6.	0
	7.	0 2
	8.	
	9.	
	10.	
	11.	8

Mean = +4.7	+0.44
Median = +4.8	+1.4
Std. Dev. = 3.62	4.66

Absolute

Mean = 5.0	3.9
------------	-----

58

Std. Dev = 3.2 2.5

(Stem equals integer of slope, leaves equal decimals.
For example, the slopes in row 2 from left to right
are +9.7, +9.5, +9.4, +9.0, +9.2.)

Table 18

Regression Slopes Per Decade in Pre 1946 and Post 1946 Cohorts

<u>Items</u>	<u>N</u>	<u>Pre 1946</u>	<u>Post 1946</u>	<u>Diff</u>	<u>Corr.</u>
All	42	+4.31	+0.33	-3.98	-.384
7 Ceiling items deleted					
	35	+3.84	+0.17	-3.67	-.478
& Education controlled					
	35	+2.89	+1.12	-1.78	-.225