An Almost Generation of Attitude Change
As Captured in the GSS

draft text prepared for Public Opinion

James A. Davis
NORC
January, 1997

TOM- As you can see, This isn't done ready
proofing but I Thought you might want To
look IT over. I'll bring a clean complete
version darkette Tuesday.   JD

A Trend Portfolio

My assignment is to summarize the 2985 entries (Abad, Richard to Zucker, Lynne) in the 10th edition of the Annotated Bibliography of Papers Using the General Social Surveys[1] in 4,000 words, 69 of which I just used up. The real challenge is diversity, not volume. As Tom Smith's essay explains, the GSS was designed to cover the complete span of sociological variables from ABANY (should abortion be allowed for any reason at all?) to ZODIAC (respondent's astrological sign, the only variable in research history included to show it doesn't correlate with anything).

Combining volume and diversity one can find a plethora of GSS results on almost any topic. For example, the bibliography has:

        66 annotations for BIBLE (literal truth of the Bible?)
         3 annotations for BIGBAND (musical preference)
        23 annotations for BRAZIL (attitude to Brazil)
        39 annotations for BURGLR (home burglarized in last
           year?)
       170 annotations for BUSING (attitude to school busing for
           racial integration)

...and so on.

One can narrow the field a bit by focusing on change. While the GSS is often treated as an electronic fact book, it was designed to track change and stability. Among continuing US surveys the GSS is unique in maintaining question wording and contexts and building in "splices" when an item is altered, e.g. the changing Census classifications of occupations. One would think nothing is easier than not being creative, but it is hard to resist the itch to tinker and the "what have you done for me lately?" attitude of funders.

The GSS contains several hundred replicated items, still too many for me to follow. Instead I track a "portfolio" of fifty attitude/opinion items (mnemonics)[2] covering major GSS themes annually (family roles, ideology, media, morale, occupational and income, permissiveness, race relations, sex norms, and the "social

---

[1] Tom W. Smith, Bradley J. Arnold, and Jennifer K. Wesely. (1995) Chicago: National Opinion Research Center.

[2] The fifty mnemonics produced (52) items because two items showed complex trends. FINRELA (self-rated financial position) tended to polarize with "Average" shrinking while "Above" and "Below" both grew. HAPPY (self-rated happiness) tended to depolarize with "Pretty Happy" swelling while "Very Happy" and "Not Too Happy" both shrank. Both variables were cut two ways, as Middle v. Other and High v. Low.

fabric"). They are not a probability sample of GSS items, which are not a probability sample of any content universe. But they do cover a wide range of sociology and the most used GSS questions.

Here I will use the portfolio to ask:

1) How much change have we seen?
2) How do Cohort Replacement and Period/Aging shape change?
3) Is there a direction to these trends?

How much change?

Although GSS samples, like fine wines, are known by their years, e.g. GSS78, it is better to look at change in terms of periods (grouped years).

On the technical side (1) until the late 80s many items were on a rotation scheme, appearing two years out of three to allow more questions and (2) the vicissitudes of funding produce irregular gaps in the series - although no gap is larger than one year. (80 83)

On the substantive side there is a very important negative finding: one hardly ever finds interesting year to year changes in GSS variables! No analyst has claimed, for example, that 1986 was a year of extraordinary transition or the 1974-1975 shifts were exceptionally smooth. At best one may hope to spot trends over decades and semi-decades. Considering these negative results in the light of the universal belief that the rate of social change is dizzying and probably accelerating, the simple question "How much change?" merits attention.

I grouped the surveys into five periods:
       Early 70s: 72-73-74-75
       Late 70s: 76-77-78-80
       Early 80s: 82-83-84-85
       Late 80s: 86-87-88-90
       Early 90s: 91-93-94(double sample)

This divides the cases into five equal sized, evenly spaced periods with a possible total of 30,136 respondents while only excluding one survey, GSS89.

The simplest answer to the simple question is the number of Period x Item changes that are statistically significant. I

dichotomised each item in the portfolio to **maximize** change from the early 70s to the early 90s and tabbed each against Period, giving 51 2x5 tables with Ns ranging from 11,403 to 29,965. Such large and variable Ns make the standard significance test problematic since the conclusion depends as much on sample size as effect size. For what its worth 44 of the 51 items show significant (.05) period differences after adjusting each for its design effect. With large Ns a useful alternative is to calculate the sample size required to make the difference just significant. Table 1 shows the results:

Table 1.
Sample Size Required to Make The Period By Item
Cross-Tab Significant at the .05 level

N	Total
<2,000	16
2,000-3,999	12
4,000-5,999	9
6,000-7,999	2
8,000-9,999	3
10,000+	9
	51

I read Table 1 this way: Since a typical survey (N=1500) has an effective N of about 1000, the 16 items with values of less than 2,000 have trends strong enough to produce significant differences in two surveys five years apart. At the opposite extreme nine of the trends are so weak they require Ns of 10,000 or more cases for reliable detection. Thus, among the portfolio GSS items:

...About one fifth (9/51=18%) are constant for all
practical purposes. These "constants" are:

ABHEALTH: allow abortion if the woman's life is in danger?
CLASS: social class self placement
FINRELA: self rated finances, Above average versus Below average(e)
FUND: proportion in Fundamentalist Protestant denominations
JOBMEANS: importance of "meaningful work"
JOBPROMO: importance of "chances for promotion"
HELPFUL: are most people helpful?
LIFE: is life interesting or boring?
TVHOURS: hours per week watching television

---

[3] "Average" is excluded. When the item is dichotomized as Average v. Above or Below a significant trend (decline in Average) appears. See Note 2.

...About one third (16/51=31%) show clear cut period
        to period variation.

...About one half (26/51=51%) show detectable change
        too small to catch with two surveys.

If forced to pick an adjective I'd choose "sluggish" rather than
"breath taking" for the overall rate of social change in the 70s,
80s, and 90s. While most of these attitudes and opinions do change,
only a minority of the changes are strong enough to be apparent in
in paired surveys five years apart.

                        significant
        Even among the 42 changers the period to period jumps are less
than spectacular. Table 2 summarizes.

Table 2.
Distribution of Period to Period Shifts

(Adjusted Absolute Percentage Differences*
Maximum, Quartiles, Median, Minimum, N=42)
                                                L=0.

From	72-75	76-80	82-85	86-90
To	76-80	82-85	86-90	91-94
Maximum	14.5	12.8	14.2	12.1
Upper Quartile	4.6	5.8	4.4	5.2
Median	3.0	2.8	2.2	4.0
Lower Quartile	1.3	1.7	1.1	1.6

* See note 3.

The typical significant period to period change is about 3 points
in terms of percentage differences[4] and only about a quarter are
five points or larger. In addition the similarity among the four
columns suggest that the rate of attitude change was much the same
through the GSS years. Among the 42x4=168 detectable differences
only 9 exceed ten points. For what it's worth, the ten pointers
are:

---

[4] The numbers here are actually "log odds ratios" divided by
4.0 (and then multiplied by 100 to get rid of the decimals). They
are very close to what the percentage differences would be if the
items had 50-50 splits. This corrects the effects for disparities
in the marginal cuts.

Table 2
GSS Mnemonics Showing Largest Period to Period Shifts

Mnemonic	Shift	Shift	Periods
COURTS	local courts not harsh enough	+14	72-75/76-80
✱ BUSING	approve busing for desegregation	+14	82-85/86-90
FEWORK	approve married woman working	+13	76-80/82-85
✱ RACOPEN	approve open housing	+12	86-90/91-94
FEHOME	disagree women should stay home	+12	76-80/82-85
GRASS	approve marijuana legalization	+12	72-75/76-80
✱ RACMAR	disapprove miscegenation laws	+11	86-90/91-94
✱ RACOPEN	approve open housing	+10	76-80/82-85
HOMOSEX	homosexuality not always wrong	+10	86-90/91-94

✱ *Calculated among whites only*

Although the typical period to period shift is only about three points, directions tend to be consistent so they cumulate. Table 3 gives the distribution of gains from the early 70s to the early 90s.

Table 3
Distribution of Adjusted Absolute Percentage
Differences, 1991-94 versus 1972-75 Among 51 Items *w .42*

Value	Percentage Points
Maximum	29
Upper Quartile	11
Median	6
Lower Quartile	3
Minimum	0

While the typical period to period shift is three points, after four such transitions the typical changer has moved six percentage points and the top quarter eleven or more. While this history lacks melodramatic lurches, the pattern of American attitudes in the early 90s is distinctly different from the ~~portfolio of~~ *pattern in* the early 70s. To give the flavor, Table 4 reports the top quartile among the 42 changers:

Table 4
Adjusted Cumulative Percentage Shift (91-94 versus
72-75) for Top Quarter of Discernable Changers.

Mnemonic	Change	Points
*RACOPEN	favor open housing	29
FEHOME	disagree women should stay home	27
*RACMAR	disapprove of miscegenation laws	27
*BUSING	favor school busing for desegregation	23
NEWS	decline in daily newspaper reading	19
FEWORK	approve married woman working	16
CAPPUN	favor capital punishment	16
LIBHOMO	oppose removing homosexual's book from public library	16
AGED	approve older parents living with adult children	15
COURTS	agree local courts not harsh enough	12
*RACMOST	approve sending own child to mostly black school	12

* calculated among whites only

In sum, among the 5̶ 2 attitude/opinion items tracked from the early
70s to the early 90s:

  82 per cent showed statistically significant period
      to period shifts.

  20 per cent showed shifts strong enough to be detected
      in pairs of surveys.

  The rate of changed was similar across the periods.

  Among the changers the typical (median) period to
  period shift was about three percentage points.

  Changes tend to cumulate so the median item
  showed a net shift of about six points from the
  early 70s to the early 90s. The top quarter
  moved from 12 to 29 points.

Cohort V. Period+Age

  Why - received sociological wisdom to the contrary not

withstanding - has attitude change been so glacial? The cynic may invoke random error, but I am not persuaded. First, our large samples give ample power to cancel out random error. Second, ~~the~~ GSS experiments showing striking effects of item wording imply respondents are seldom answering at random.

The fashionable Age/Period/Cohort (APC) trinity gives a helpful perspective. Although pop social science focuses on the (dubious) effects of birth cohort **size**, the single largest change among all the variables in the GSS is sheer cohort replacement. Table 5 illustrates:

Table 5
Year of Birth of GSS Respondents by Period

Period	Quartile	Median	Quartile	(N)
91-94	'35	'50	'61	(6101)
86-90	'27	'46	'57	(5733)
82-85	'24	'42	'54	(6080)
76-80	'19	'36	'48	(6000)
72-75	'15	'30	'44	(6071)

In 72-75 half the GSS respondents were born before the Great Depression, in 91-94 half were born after the Korean war. The youngest quartile in 72-75 became (roughly) the oldest third in 91-94.

The message of APC analysis for attitude change is that trends can be produced by two distinct processes: (1) the replacement of older cohorts by newer cohorts with different attitudes, aka cohort replacement and (2) net shifts in opinion among people in cohorts present throughout the period, aka intra-cohort shift. Call the first REP for replacement, the second INTRA. There is a voluminous and often esoteric methodological literature on all this but consensus seems to be emerging in support of Firebaugh's multiple regression approach.[5] In brief, one regresses the attitude (here a 0-1 dummy variable) on Period and Cohort (here divided into five equal groups to match the Period distribution) and multiplies each b coefficient by the amount of change in the predictor. The products are two numbers which (1) ~~usually~~ add up to close to the total change and (2) tell how much change was produced by (a) cohort replacement (REP) and (b) effects of time and aging within cohorts (INTRA). AGED, attitudes toward multi-generational cohabitation, illustrates:

Table 6

---

[5] Glenn Firebaugh (1989) "Methods for Estimating Cohort Replacement Effects," Sociological Methodology, 19:243-262.

Decomposing Net Change in AGED, 72-75 to 91-94

Predictor	b	Change	Product	
Period	+.0175	4.0000	.0700	= INTRA
Cohort	+.0746	1.304	.0973	= REP
			Total .1673	

the proportion ~~answering~~ choosing "Good idea" for

Table 6 says: For Period, ∧AGED increased .0175 per period net of Cohort so a 4 period change boosted the marginal proportion .0700. For Cohort the regression coefficient is +.0746 and Cohort (divided into 5 equal categories) increased 1.304 units boosting the percentage .0973. The two boosts sum to .1673 or 17 percentage points. This number differs slightly from the raw data value 19.2 because raw data are seldom exactly on the regression line and differs from the value of 15 in Table 4 because the 15 is adjusted for marginals (See footnote 3).

In short, favorability toward multi-generational households increased about 17 points from the early 70s to the early 90s. Ten of these points occurred because less favorable older Americans were replaced by more supportive younger ones, seven points because favorability increased within cohorts.

When all 51 items are subjected to this exercise, we get the distributions shown in Table 7.

Table 7
Distribution of REP and INTRA effects for 51
GSS Attitude/Opinion Items, 72-75 to 91-94

	Cohort Replacement		Intra-Cohort Shift	
	Raw	Absolute	Raw	Absolute
Maximum	14.7	14.7	16.3	16.3
Upper Quartile	9.7	9.7	7.6	8.1
Median	2.9	5.2	3.8	5.2
Lower Quartile	-2.3	2.6	-0.7	2.3
Minimum	-9.3	0.4	-8.3	0.2

In terms of sheer magnitude, each process, REP and INTRA, typically produce∧a five point change from period to period. Hardly impressive, but hardly trivial by comparison with the sorts of numbers we have seen so far. Clearly both Cohort replacement and Intra Cohort shifts are major effects when examining American attitude trends.

At the bottom of Table 7 we see, for the first time, negative signs. You will remember I began by dichotomizing each item to maximize total change. Consequently in these analyses a + sign means "in the direction of the cumulative trend." Necessarily ~~then~~ a - sign means "opposite to the cumulative trend". Table 7 shows that a quarter of the REP and a quarter of the INTRA signs are negative.

So what? While the overall regression results imply a general linearity in attitude trends, Table 4 implies some pushing and tugging between the two processes. Since (by definition) the two coefficients can't both be negative there must be lots of variables where REP and INTRA work in opposite directions.

Exactly the same point emerges from the ~~simple~~ bivariate correlation between the raw REP and INTRA coefficients. Over the 51 items the r is -.594! While REP and INTRA seem to be ~~about~~ equally powerful forces they tend to push in opposite directions for these 52 attitude and opinion items. For 31 of 52 items, 60 percent, the two forces have opposite signs.

When two equally strong forces push dependent variables in opposite directions the total change will be muted. If INTRA and REP always had the same sign, were uncorrelated and each had a typical effect of five points, the typical attitude item would have shifted ten points during the GSS years rather than the six points actually observed.

While -.594 is a surprising correlation, it is not so strong as to prevent a variety of INTRA/REP patterns. Thus:

Table 8
Illustrative REP and INTRA Patterns

Mnemonic	Shift	INTRA	REP	TOTAL
	A) Consistent			
AGED	approve intergenerational cohabitation	7.0	9.7	16.7
FEHOME	disagree women should stay home	10.1	10.7	20.8
RACOPEN	favor open housing	16.3	11.4	27.7
	B) Mostly Period			
BUSING	favor school busing for desegregation	13.3	4.4	17.7
CAPPUN	favor capital punishment	11.6	-1.3	10.3
PARTYID	party preference not Democratic	7.6	1.8	9.4
	C) Mostly Cohort			
LIBHOMO	not remove homosexual's book from library	2.2	10.8	13.0
NEWS	not read newspaper daily	2.7	13.2	15.9
PREMARSX	premarital sex not always wrong	0.2	12.0	12.2
	D) Contradictory			
FINALTER	family financial trend not "Better"	12.2	-9.3	2.9
HOMOSEX	homosexuality not always wrong	-7.8	+8.7	0.8
SOCBAR	infrequent patronizing of bars and taverns	11.4	-8.3	3.1

while the variable is named Period)

The moral here is that raw trends can be quite misleading.

The apparent stability of HOMOSEX conceals two non-trivial changes. A nine point increase in tolerance due to replacement is offset by an eight point decrease within cohorts.

force driving Them

The total increases for LIBHOMO and BUSING might imply a liberal ~~tide in opinions~~, but one is almost entirely due to Cohort replacement, the other is almost entirely due to Intracohort shift.

Common

The frequent Contradictory patterns raise intriguing questions of interpretation. The Firebaugh method cuts the APC Gordian knot by lumping Period and Aging effects. That is, there is no way to tell whether an INTRA effect comes from "normal aging" or from forces unique to the sequence of periods. ~~Signs, however, can be suggestive.~~ An effect due to Aging should produce contradictory signs, the aging process pushing one way within cohorts and the substitution of more youthful cohorts pushing the other. For example, for HEALTH (+ = self rating as "Excellent" or "Good") we get an INTRA of -6.4 (as aches and pains develop with age) and +11.2 for REP (as frisky baby boomers replace saggy oldsters). It seems plausible to me ~~that the~~ sign ~~patterns~~ for SOCBAR and FINALTER ~~reflect~~ aging since bar hopping and career progress probably both decline with age. However, I am not prepared to say the same for HOMOSEX. My inclination is to invoke AIDS anxiety as the force behind the negative INTRA effect.

together

Perhaps I'm right, but these numbers can not tell us why intra cohort shifts occur and I don't even want to think about the possibility that zero INTRA effects can come from opposite signs for AGE and PERIOD influences.

While APC data tell us "how", even the most sophisticated manipulations can not tell us much about "why" in the absence of substantive information. Such analyses go far beyond my commission here, but some light is shed by considering "liberalism" and "conservativism."

check Powell?

The Liberal Plateau

Following Mr. Justice Steven's algorithm for pornography I rated the items in the portfolio on whether they have a social or political liberal v. conservative polarity. (I associate liberalism with permissiveness, racial color blindness, irreligion, and untraditional family structures). I coded each of the fifty items with +1 if its overall trend is liberal, -1 if conservative, and 0 otherwise wise.

Overall, 17 trends were Liberal, 24 neither, and 11 conservative. Table 9 summarizes the results when the 72-75 to 91-94 percentage changes, ala Table 2, are multiplied by +1, 0, or 1, and the 0s are excluded.

Table 9
Adjusted Percentage Trends 72-75 to 91-94
Weighted for Ideology (N=28)

	Cohort	Period	Total
Maximum	14.7	16.3	27.7
Upper Quartile	10.7	4.2	12.2
Median	6.2	-2.6	4.4
Lower Quartile	2.3	-7.6	-3.7
Minimum	-9.7	-13.4	-16.7
N +	25	9	17
N -	3	21	11

Overall, the typical ideological item in the portfolio shifted 4 points in the liberal direction, a quarter liberalized by 12 or more points and a quarter conservatised 4 or more points.

Again, a tepid overall result conceals opposing tendencies. The Cohort and Period/Age effects are quite different in ideology Almost all cohort effects (25 of 28) are liberal, with a median of +6. Most Period/Age effects are conservative (21 of 28) with a median of -3. Although here the Cohort and Period differences are correlated positively (r=+.277)[6] because of the disparity in signs, they work against each other as often as not. Of the 28 pairs 15 had opposite signs, ten had both positive and three were both negative. Table 10 illustrates.

---

[6] Necessarily, the negative correlation between Cohort and Period effects increases to a surprising -.822.

Table 10
Cohort and Period Effects of 5 Points or stronger
Among Ideologically Signed Items

Item	Liberal Trend	Cohort	Period	Total
RACOPEN	Favor open housing	+11	+16	+28
AGED	Olders not share home	-10	-7	-17
FEHOME	Disagree women should stay home	+11	+10	+21
RACMAR	Oppose miscegenation laws	+13	+6	+19
FEWORK	Married woman should work	+9	+5	+14
PORNLAW	Legalize pornography for adults	+14	-6	+8
XMOVIE	Saw x-rated movie within year	+10	-6	+4
GRASS	Legalize marijuana	+9	-12	-4
HOMOSEX	Homosexuality not always wrong	+9	-8	+1
RELITEN	Religiosity not strong	+8	-7	+1
DIVLAW	Loosen divorce laws	+7	-11	-4
XMARSEX	Extramarital sex not always wrong	+6	-13	-7

For the five items at the top, the two forces work together producing the largest shifts in the portfolio, four liberal and one, the anomalous tendency for Americans to invoke greater approval of older adults living with their adult children (during an era of rapidly shrinking households) conservative. When, as is more often the case, these processes work against each other, the net change is muffled as in the bottom five items.

To review: the question is why attitude shifts in contemporary America, while statistically reliable, are so modest. Part of the answer is that the Cohort replacement and Period/Age processes are equally powerful but tend to push attitudes and opinions in opposite directions. Some of this comes from the necessary statistical consequences of "age effects" although we can't spot them directly with the tools at hand. When we focus more narrowly on the 28 items with a Liberal/Conservative flavor to the options, the situation changes. The negative correlation disappears but the push/pull remains. This is simply because almost all Cohort effects are liberal and most Period effects are conservative so their sums are reduced.

Now this is actually a bit odd. Assuming cohort differences are produced by the same broad forces that produce period effects, it is hard to see how younger generations can be increasingly liberal while growing up in increasingly conservative milieux. A closer look at the Cohort->Attitude curve sheds light. To proceed I (a) divided cohort into 10 equal sized groups and tabulated it against the ideological items, excluding seven with ceiling effect problems (liberal values of 80 per cent or more in the youngest cohorts) and