

CALTECH'S 1963 ALUMNI SURVEY

III. Politics, Community Activities, and Grades

by John R. Weir

It is almost inevitable that the increasing technical complexity of modern living will result in more and more of our alumni achieving positions of influence in business, industrial, and government affairs. Consequently, their economic and political attitudes are of considerable interest.

The sections that follow contain an analysis of responses to survey questions concerning the contemporary political, social, and cultural activities of our alumni. They are in turn followed by comparisons of these activities with the extracurricular activities of the alumni during their college years.

POLITICAL AFFILIATIONS

U.S. college graduates are predominantly Republican in their political party affiliation, and have been for many years. This was also true for Caltech alumni in 1952, and it still is. According to the current survey, two-thirds of our alumni had parents who voted Republican, a majority consider themselves Republican, and two-thirds favored the Republican candidate in 1960.

	% Rep.	% Dem.	% Indep.
Parents voted	65	35	
Consider self	55	22	23
Favored in 1960	64	36	
Likely favor in 1964	49	27	24

Political party preference is closely correlated with age. Our older alumni are much more frequently Republican than Democratic or Independent. Among those under 30 years of age, four out of ten are Republican. In the 60-and-over age group they have doubled in frequency to eight out of ten. This occurs at the expense of both Democrats and Inde-

pendents, and leaves the percent of Democrats in the oldest age group at an insignificant 7 percent.

Age	% Rep.	% Dem.	% Indep.
Under 30	39	32	29
30 - 39	53	23	23
40 - 49	61	20	19
50 - 59	67	13	20
60 and over	80	7	13

Preference for the Republican Party also varies according to the highest degree obtained. Among alumni with the BS as highest degree, two-thirds are Republican; while those with the PhD are nearly equally Republican, Democratic, and Independent. Postgraduate education seems to reverse the tendency for a college education to make its graduates Republican.

Highest Degree	% Rep.	% Dem.	% Indep.
BS	68	11	21
MS	57	15	28
PhD	41	29	30

Undoubtedly, some of this difference is due to the fact that there is a disproportionately large number of young PhD's in our alumni body. But its effect is small, for an analysis in which age was held constant gave essentially the same percents for the different degree levels.

A more important influence seems to be related to attendance at Caltech. By dividing alumni according to where they obtained their degrees, we were able to calculate the following percentages:

	% Rep.	% Dem.	% Indep.	Number
BS only (from CIT)	68	11	21	1,638
BS (CIT) & PhD (CIT)	46	29	25	264
BS (CIT) and PhD (not CIT)	39	32	29	347
BS (not CIT) and PhD (CIT)	36	30	33	608

This table suggests that the study required for a Caltech BS degree tends to encourage, and that for a PhD degree to discourage, Republican party affiliation.

There was also a very significant increase in the proportion of Republicans in the higher income brackets.

Income	% Rep.	% Dem.	% Indep.
0 - \$3,999	18	30	52
\$4,000 - \$8,999	32	21	47
\$9,000 - \$12,999	54	23	23
\$13,000 - \$18,999	56	22	22
\$19,000 and over	66	16	18

Superficially, these changes seem quite reasonable. One might expect that as the alumnus gained a higher income he would come to favor more conservative political and economic ideas. However, when similar analyses were made with age held constant, the correlation disappeared. The differences we see in the table above are due to the fact that there are larger-than-average numbers of young alumni in the lower income brackets, and a high concentration of older alumni in the upper income brackets. In all but the very early and the very late years, approximately 60 percent of our alumni are Republican, 20 percent are Democratic and 20 percent Independent, regardless of income.

CONSERVATIVE OR LIBERAL?

We were curious about any changes that might have occurred in the political and economic thinking of alumni since graduation. How do their attitudes compare with those reported in 1952?

To answer this question, we repeated a procedure used in the 1952 survey. We defined "conservative" as agreeing with at least three of the following four statements, and "liberal" as any other combination of replies:

Democracy depends fundamentally on the existence of free business enterprise.

The best government is one which governs least.

Government planning should be strictly limited, for it almost inevitably results in the loss of essential liberties and freedom.

Individual liberty and justice under law are not possible in Socialist countries.

On the basis of this definition, a majority of our alumni are now liberal (58 percent), whereas in 1952 a majority were conservative (62 percent). Although each of the first three statements had a majority of alumni agreeing with them, only 42 percent agreed with three or all four of them and therefore were identified as "conservative."

Age. There are four times as many liberals as there are conservatives in the under-30 age group. If their thinking has changed, it is as likely to have become more liberal as it is to have become more conservative. Among those over 60 there are four times as many conservatives as liberals, and if their thinking has changed it has been in the conservative direction.

Undergraduate Major. Alumni with undergraduate majors in civil, electrical, or mechanical engineering are somewhat more conservative than liberal. If their thinking changes, it tends to become more conservative.

On the other hand, alumni with degrees in astronomy, biology, chemistry, mathematics, and physics are somewhat liberal, and become more liberal if their thinking changes.

Highest Degree. Among alumni who have the BS as their highest degree, a majority (54 percent) are conservative. Among those with the PhD, almost three-quarters (72 percent) are liberal. Those with the MS are slightly liberal (58 percent).

Occupational Titles. Thirty-three different job titles were listed in the questionnaire for the alumnus to indicate his occupational position. There were definite majorities for either the liberal or conservative viewpoint associated with many of the titles. For example, those that were conservative were chief, manager, owner, partner, president, representative, retired, superintendent, and vice-president. Those that were liberal were assistant, assistant professor, associate professor, chairman, dean, director, engineer, group leader, instructor, professor, project leader, project supervisor, scientist, staff member, student.

The concentrations of business and industrial positions in the conservative group, and of educational and research positions in the liberal group are very striking. When compared with business and industry, the relatively greater personal and intellectual freedom provided by the university or research laboratory seems to attract and keep those alumni who prefer change, innovation, and personal freedom, and whose thinking is apt to become more liberal with the passage of time.

ORGANIZATIONAL MEMBERSHIP

Caltech alumni could hardly be called "joiners." Only 40 percent indicated membership in a recreational or fraternal organization, and only 28 percent belong to civic, patriotic, educational, or political organizations. However, they do belong to business, labor, professional, and scientific organi-

zations; 76 percent indicated they were members of such organizations, and almost a third hold one or more offices or committee memberships.

Two other differences of significant but minor magnitude appear in relation to organizational memberships. Firstly, alumni with the BS as their highest degree are more likely to belong to recreational and fraternal organizations than are those with PhD's, while the PhD's are more likely to belong to professional and scientific organizations than are the BS's. Secondly, alumni with engineering degrees are more likely to belong to recreational and fraternal organizations, while those with degrees in science and mathematics are more likely to belong to professional and scientific organizations.

CIVIC ACTIVITIES

A section of the questionnaire requested the alumnus to check any of 14 specified civic or community activities he might have engaged in during the preceding year.

Ninety-five percent of the alumni reported participating in one or more of these activities. Forty-two percent were active in five or more, and 10 percent participated in nine or more. Within the latter group, those with BS degrees were most numerous (42 percent), those with PhD's least numerous (28 percent). Alumni with the most education are least active in the kinds of civic and community affairs where their knowledge and abilities should be very valuable.

CULTURAL ACTIVITIES

Almost all alumni indicated an active interest or participation in one or more of the following cultural activities:

	<i>% checking 1 or 2, or several</i>
<i>During the past year,</i>	
Attended a musical event	86
Visited a museum, art gallery, etc.	85
Read non-fiction for pleasure	89
Read classics for pleasure	50
Attended a lecture on a subject of cultural interest	70

Obviously, Caltech alumni do not fit the stereotype of the narrow-minded scientist with few interests or concerns outside the laboratory. In fact, these figures are about what one would expect from alumni of a liberal arts college.

Again the frequency of participation is related to undergraduate major. Those with degrees in science participated in all these activities more frequently than those with degrees in engineering.

COMMUNITY ACTIVITIES

We combined the foregoing items in a manner that would identify a group of alumni who are very active and a group who are very inactive in community affairs. This was accomplished by selecting one group of alumni, all of whom had listed five or more civic activities, held membership in three or more organizations, and had cited two or more political, cultural, or philosophical interests (*E & S* - June 1964). The contrasting group was composed of those who listed less than five civic activities, held fewer than three memberships in organizations, and cited no more than one political, cultural, or philosophical interest. The first group, containing 16 percent of the alumni, we will call "Community-Affiliated"; the second group, with 20 percent, will be "Ivory-Tower".

These two groups turn out to be quite different from each other in matters of age, highest degree, income, and occupational field.

Age. Participation in community affairs is a function of the middle years. Alumni under 30 are often still students, frequently unmarried, and not yet permanently established in a community. The 30-to-40-year period is the time of social and professional stabilization and the beginning of active participation in community affairs. Participation reaches a maximum in the 40-to-50-year age group. By this time the alumnus is well established in his occupation and in his community. He has both time and opportunity to become actively engaged in his professional organizations and in his community's affairs, and may even have been encouraged to do so by his employer.

<i>Age</i>	<i>Community Affiliated</i>	<i>Ivory Tower</i>
% under 30	7	35
% 30 - 39	29	28
% 40 - 49	39	20
% 50 - 59	19	12
% 60 and over	6	5

Highest Degree. Community activity also varies by highest degree, at least between the two groups we are discussing here. Alumni with PhD's are found more frequently than those with BS's in the Community-Affiliated group.

<i>Highest Degree</i>	<i>Community Affiliated</i>	<i>Ivory Tower</i>
% BS	31	41
% MS	33	37
% PhD	36	22

Income. The greater the income, the more likely it is that the alumnus will be in the Community-Affiliated group. Here the proportions almost reverse themselves in the transition from low to high income.

Income	Community Affiliated	Ivory Tower
% 0 - \$4,999	2	11
% \$5,000 - \$8,999	2	10
% \$9,000 - \$12,999	16	25
% \$13,000 - \$18,999	35	33
% \$19,000 - \$24,999	19	12
% \$25,000 - \$29,999	9	3
% \$30,000 and over	18	5

Approximately half of the Community-Affiliated group have yearly incomes above \$19,000. Approximately half of the Ivory-Tower group have yearly incomes below \$13,000.

Occupational Field. Some of the occupational fields in which our alumni are engaged can also be distinguished in terms of community activity. The following occupations had a majority of Community-Affiliated alumni in them: Biochemistry, Business, Chemistry, Civil Engineering, Education, Finance, Geology, Law, Medicine, and Petroleum Engineering. Most of these occupations have an important element of human relations and public service in them. Those with a high majority of Ivory-Tower alumni in them were: Astronomy, Economics, Electrical Engineering, Mathematics, Mechanical Engineering, Military, and Physics. Here the emphasis is toward intellectual and technical pursuits done in relative isolation. In fact, some of these occupations are often referred to as ivory-tower jobs.

Undergraduate Extracurricular Activities. The consistent and quite logical differences between the Community-Affiliated and the Ivory-Tower groups raise the question as to whether these groups were different as undergraduates. We've already seen that they majored in different subjects. Were they also different in their amount of participation in extracurricular activities? The answer is yes.

In the questionnaire, we asked the alumnus to indicate whether he had participated in any of eight different kinds of extracurricular activities—varsity sports, other sports, writing, music, speaking, politics, clubs, and societies. We then grouped all those who participated in four or more kinds into a High-Activities group and those who reported no participation in any activity into a Low-Activities group. When these two groups are cross-compared with the Community-Affiliated and Ivory Tower groupings, it is evident that the alumni who are active in community affairs also participated in extracurricular activities in college.

	Community Affiliated	Ivory Tower
% Alumni participating in four or more kinds of extracurricular activities	25	15
% in no activities	8	16

Alumni in the High-Activities group reported that they value their undergraduate activities highly and would participate in them again if they had it to do over. This was also true for the Community-Affiliated alumni. On the other hand, only a minority of the Low-Activities group think their extracurricular activities were of value after college and only a slight majority would participate again if given another opportunity. While most of the Ivory-Tower group think undergraduate activities have value after college, only two out of three would participate if they had it to do over.

	% Think ECA of Value after College	% Would Participate Again
High Activities	91	91
Community-Affiliated	81	81
Ivory-Tower	93	62
Low Activities	34	60

From the foregoing we might conclude that the student who is active in student affairs will later on be active in community affairs. The campus leader becomes the community leader.

Grades. Alumni in the Community-Affiliated group got higher grades than those in the Ivory-Tower group. In fact, the Ivory-Tower group is somewhat below the distribution of grades for all alumni combined.

	% Mostly A's	% Mostly B's	% Mostly C's
Community-Affiliated	32	59	9
Ivory-Tower	26	62	13
Total Alumni	28	59	13

While the differences are not great they do suggest a positive relationship between the personal characteristics that contribute to earning high grades in college and those that lead to an active social and community life after graduation.

The opposite seems to be true in the case of undergraduate extracurricular activities. Among those participating in four or more kinds of activities there are fewer getting mostly A's than in the total alumni group or in the group that had zero participation. In fact, the zero participation group had fewer "Mostly C's" than the total sample.

	% Mostly A's	% Mostly B's	% Mostly C's
ECA—four or more	23	64	13
ECA—none	27	64	9
All alumni	28	59	13

Perhaps there is a kind of grade penalty for participation in student activities, or perhaps some A students refrain from extra activities in college, but become active in the community later on.

continued on page 20

GRADES: ESTIMATED AND EARNED

In the present survey we asked the alumnus to estimate his four-year over-all grade-point average using a scale of A=4, B=3, C=2, and D=1. This is the scale used by Caltech and most U.S. colleges. In addition, actual earned GPA's were copied from Institute records — before mailing — onto the questionnaires of those alumni who did their undergraduate work at Caltech.

When the estimates from memory are compared with the actual GPA's, it turns out that our alumni have quite good memories. On a scale running from 1.0 to 4.0, one-quarter estimated correctly, another quarter missed by 0.1 grade point and a third quarter missed by 0.2 or 0.3. Only 12 percent over- or underestimated by more than 0.5 GPA.

As might be expected, the magnitude of the errors increased with years out of college. The errors also tended to be in the optimistic direction. This was particularly true for those earning GPAs below 2.5. The median actual GPA for all undergraduates was 2.6, the median estimated was 2.8, and the median error was 0.2. Perhaps the small size of these errors is evidence of the ease with which Caltech alumni usually deal with numbers. Or perhaps it reflects the importance the GPA had for our alumni.

In the 1952 survey we asked alumni to report whether they got mostly A's, B's, C's, or D's during their undergraduate years. When their grades are compared with those in the present survey, the more recent alumni appear to have earned higher grades as undergraduates.

<i>Grades Mostly</i>	<i>% 1963</i>	<i>% 1952</i>
A's	28	22
B's	59	50
C's	13	28

During the last decade, the academic ability of our undergraduates has increased, and so has the awarding of higher grades. Consequently, more undergraduates *have* been earning higher grades in recent years.

Grades and Highest Degree. Several interesting aspects of grade-point average requirements for admission to advanced work are revealed when comparisons are made between alumni with graduate degrees who attended Caltech as undergraduates and those who did their undergraduate work elsewhere. We used the undergraduate estimated GPA to calculate medians for various combinations of alumni with undergraduate and graduate degrees obtained at Caltech and other institutions. (To do so, we had to assume that the

optimistic error of 0.2 for those who did their undergraduate work at Caltech also held for alumni who got their BS's elsewhere. To approximate actual GPA's, it would be necessary to subtract this error from the medians that follow..

MEDIAN ESTIMATED UNDERGRADUATE GPA'S

<i>Degree Combination</i>	<i>Four-year GPA</i>
Other BS, Caltech PhD	3.6
Other BS, Caltech MS	3.4
Other BS, Caltech Engineering	3.3
Caltech BS, Caltech PhD	3.2
Caltech BS, Caltech MS	3.0
Caltech BS, Other PhD	3.0
Caltech BS, Other MS	2.8
Caltech BS only	2.7

On the average, a Caltech undergraduate needs a 2.8 to get an MS elsewhere and a 3.0 to get one at Caltech, while an undergraduate coming from elsewhere needs a 3.4 to get an MS from Caltech. This is a difference of 0.6 grade-point.

A similar difference holds for the PhD degree. A Caltech undergraduate needs a 3.0 to get a PhD elsewhere and a 3.2 to get one at Caltech, while an undergraduate from another college needs a 3.6 to get a PhD from Caltech.

One interpretation of these figures is that a 2.6 at Caltech is equal to a 3.2 elsewhere. This may sound familiar to many Caltech undergraduate alumni who have heard it said that a C at Caltech is equal to a B anywhere else. Only 37 percent of Caltech alumni with the BS as their highest degree got 3.0 or above.

Another interpretation is that Caltech has higher standards of admission to graduate school for those with BS's from elsewhere than it has for its own bachelors. That standard is about 0.4 GPA. This interpretation is further supported by the fact that among all alumni with advanced degrees, those who got their BS's elsewhere had a higher percentage of GPA's above 3.0 (93 percent) than those who got BS's at Caltech (58 percent).

It appears to take mostly A's (3.4) to be accepted at Caltech for graduate work, while our own BS's do graduate work at other schools with mainly B (2.8) averages. When we consider the additional fact that only 14 percent of *all* Caltech BS's got A's, one can only conclude that Caltech grades cannot be equated with grades from other colleges. The price of a high quality student body is high quality competition.

Third in a series of articles in the survey conducted last year by Dr. Weir, associate professor of psychology. In our next issue, Dr. Weir will discuss occupations, income, and achievement.