

American Views on Science and Technology

by G. Donald Ferree, Jr.

Americans want their country to stand at the forefront on scientific and technological advance as it enters the new century. They expect that new developments in science and technology will have a real and positive impact both on our national life and on the everyday lives of citizens. While they do not believe science is entirely without risk, they are personally interested in matters scientific, and are supportive of public policy that will build on what we have achieved and maintain or better the standing of the United States compared to other advanced societies. This is the picture that emerges from a new national survey commissioned by the National Science and Technology Medals Foundation and conducted in late Spring by the Roper Center for Public Opinion Research.

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The public wants science and technology to occupy a key place on the national agenda. Almost seven in eight (84%) agree that “it is important that the United States be the world leader in technological progress.” When asked to compare where they now see the US, compared to other advanced industrial societies, and what is the least they would accept looking twenty years down the road, some 85% will accept no less than our current standing, and more than half (53%) insist that the United States either be world leader or at a minimum occupy a higher position than the nation now does.

Americans know this will require effort. Eight in ten (81%) agree that encouraging our brightest young people to go into science should be a top national priority. Another strong majority (85%) agree that “unless we put more emphasis on science in the schools, we won’t have the trained people we need for life in the twenty-first century.” There is a strong sense that, as a society, we do not sufficiently honor those who make scientific and technological discoveries. Three in four felt that they get *too little* recognition (and only a handful thought they received too much). This compares with what the public sees as an appropriate level of recognition for those who succeed in business. By contrast, almost nine in ten think entertainers and sports stars receive *too much* attention.

Interest in Science and Technology

As individuals, Americans have a personal interest in matters scientific. Half (47%) of all survey respondents say they react with “satisfaction or hope” when they think of science and technology, as opposed to the more glowing “excitement or wonder” (36%). But both dwarf the technophobe’s “fear or alarm,” chosen by only 6%. Going along with a high professed level of attention, only 8% describe their reaction as one of “indifference or lack of interest.”

This finds an echo at the personal level. When respondents get a new technical gadget six in ten (58%) say they feel “excitement at discovering what it can do,” while one in four (26%) take the more utilitarian stance and “hope it will let you do things more easily.” A small number (9%) express indifference, and—despite all the comic references to VCR’s blinking “12:00” across the nation—even fewer (6%) express “fear you won’t be able to use it” when dealing with a new device.

The public is eager to learn about developments in science and technology. When presented with a list of five specific areas (advances in medicine, science discoveries in general, new inventions, computers, and space exploration), 85% declare themselves “very interested” in at least one, and just under half (46%) are eager to learn about at least three of the five. At least two-thirds of all Americans are at least “somewhat interested” in each of the individual areas; thus interest is broad.

Television is the most common single source of information about new developments in science and technology—named by four respondents in ten, although newspapers and/or books and other written materials together have as large an audience. Two thirds (67%) of those interviewed said they paid “a lot” of attention to one or more types of programs dealing with science and/or technology, such as news reports, special programs, and even entertainment shows dealing with science.

Science and the Future

Americans expect science to play a major role in the kind of society we shall be in the next millennium. Almost eight in ten think that science and technology will eventually solve “most” (22%) or “some” (56%) of the “problems faced by our society.” On

balance, the impact of new discoveries over the next decades, in terms of both their benefits and risks and drawbacks, is seen to be positive by six in ten (strongly so by 24%, somewhat so by 35%) and negative by fewer than one in ten (somewhat by 6%, strongly so by only 1%).

When attention was turned to the impact of new discoveries on six specific areas (ranging from the economy to national defense, and from standard of living to health) the overall balance was positive for each area. The degree of optimism ranged from a high (71% positive, 8% negative) for “your health and the health of your family” to a low for “job opportunities for people like you” (44%-26%) (See Figure 1). It is worth noting that there was more optimism when it came to opportunities for today’s children, where those who expected a positive impact outnumbered those who feared a negative one by almost three to one (61%-22%). Overall, seven in ten believe more areas will be improved than harmed, while fewer than one in five think more areas will be harmed than helped. All this goes along with the nine in ten (90%) who agree that “science and technology are making our lives healthier, easier, and more comfortable.”

The public does not take a simplistically optimistic stance toward science, however, but perceives both a light and dark side to new discoveries. Thus, just over half (52%) believe both that science and technology have caused some or most of the problems we face and that in the future it will solve some or most of society’s problems. One in four (25%) take the most positive view, that science and technology will solve most or some problems but have caused few or none. This is twice as large as the group (13%) which expects science and technology to solve few or none of our problems, but to have caused most or some of them. Most telling, perhaps, fewer than one

in ten (8%) see science and technology as irrelevant, solving or causing only few or none of the difficulties we face.

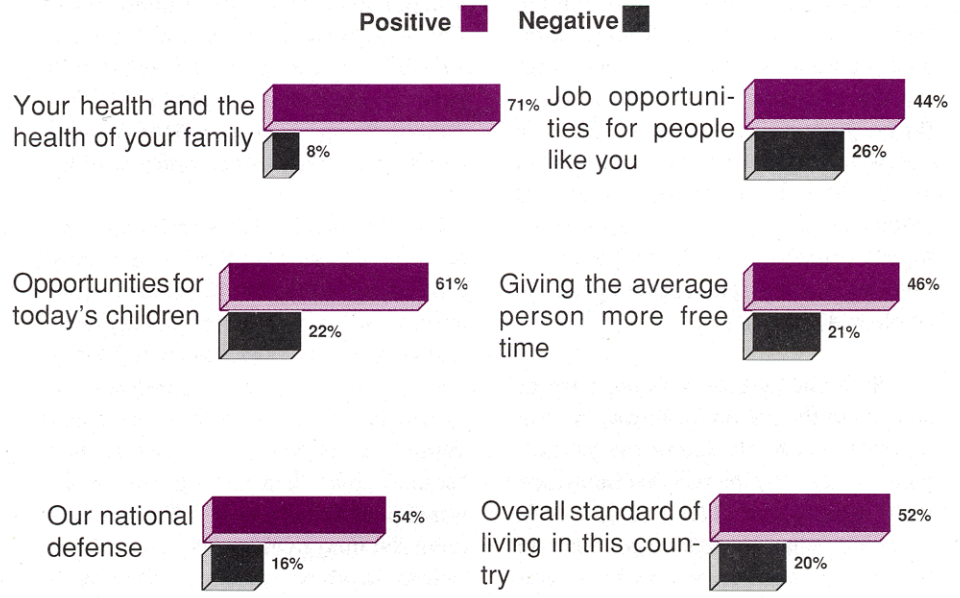
The public does not insist on an immediately obvious payoff. By more than three to one (75%-22%) Americans agree that “spending money on pure scientific research is a good investment,” even if “it is impossible to see what practical benefits it might have.” On the one hand, this could reflect a sentiment that “pure research” is important for itself. On the other, it may stem from a conviction that the unforeseeable spillover effects will be real (and positive). For whatever reason, it would seem that “research” and not simple “problem solving” finds a quite positive reception among the American public.

There is a broad sentiment that the next decades will see a continuation of an era of speedy scientific development. Two thirds (68%) would characterize the past twenty years as a time of “rapid change,” while almost all the remainder (24%) call it “moderate change.” Very few call what has been happening either “slow change” (3%) or “not really much change at all” (4%). When respondents were asked to use the same categories to describe what they expected the next twenty years to hold, answers were virtually identical: rapid change 69%; moderate change 23%; slow change 4%; not much change 2%.

Expectations are one thing, evaluations can be another. But when respondents were asked what their reaction would be if “things stayed pretty much the same in terms of science and technology over the next twenty years,” just over half would be either greatly (21%) or “somewhat” (33%) disappointed. This group is partially offset by those who would be greatly pleased (7%) or somewhat pleased (34%). A parallel question about “technology you use every day” found similar results. Some 54% would be disappointed if that did not change much, while 43% would be at least greatly or somewhat pleased.

Figure 1: A Strong “Yes” To Scientific Innovation

Question: New discoveries and inventions have both benefits and also risks and drawbacks. On balance, over the next few decades, do you think the impact of research discoveries in science and technology will be strongly positive, somewhat positive, evenly balanced, somewhat negative or strongly negative?...How about on...



American Views on...

Science and Technology as National Endeavor

While Americans do think it is important for scientific and technological progress to be stressed on the national agenda, they do not take a solely nationalistic view of such progress. A bit more than one in three (36%) say that when an American makes a scientific discovery, they most feel "pride as a fellow American." But slightly more (41%) say that "pleased as a human being" comes closer to the mark. This is one area where respondents' age seems to make a difference. Among those aged sixty or older, those feeling national pride at scientific success outnumber those

The federal role is seen as being in cooperation with the private sector, not in displacing it. When respondents were asked what emphasis they felt each of several different modes of government involvement should receive, most popular was the federal government "providing financial support for research that universities and private companies think is important." Half (50%) would give this a major emphasis, four in ten (39%) a "minor" one.

On the other hand, least popular was "doing research itself in government labs or other facilities." (Some 37% would accord this major emphasis, 49% minor focus.) "Setting priorities for

had "only some," and one in four "hardly any."

Both the government and "corporations" clearly fare less well than do universities. Four in ten (39%) have a lot of confidence in the decisions they make about science (which is consistent with backing for financial support from, but misgivings about priority setting by, the less-trusted federal government). "Medical researchers" occupy the top rung of the trust ladder. More than half of all respondents (55%) accord them "a great deal" of confidence in making decisions about research. Adding in the four in ten (38%) who have "only some," accounts for more than nine respondents in ten.

A Special Case: Space

Historically, the space program has been an important part of scientific advancement and of public attention to it—although interest certainly has fallen since the heat of the moon race with Russia. Overall, the space program is seen as a good thing by eight in ten, either as exciting and worthwhile in itself (52%) or as necessary to keep up with other countries (27%). Fewer than one in five (18%) reject it as "a waste of time and money."

Space does retain romance. Almost half (44%) of all Americans would welcome a chance to go into space themselves—with men twice as likely to say they would like to go as women are (59% compared to 32%). While there is a strong age-related trend, it is less surprising that willingness is higher among the youngest group (69%) than it is among Americans sixty or older (24%).

On balance, two thirds (67%) would favor "sending a US manned mission to Mars," only one in four (27%) would oppose it. Men are more one-sided in support than women, although the latter do back a Mars voyage by a two-to-one margin. It is worth noting that the survey was conducted prior to the first reports of potential evidence of life on Mars during the summer.

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A conflict has sometimes been claimed between religious affiliation and attitudes toward scientific progress. When those who claimed that religion had at least a modest importance to them were asked specifically about this potential conflict it fails to emerge in any meaningful way. Two thirds of all those polled said that "new developments in science" did not have much to do with their religious beliefs one way or the other.

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claiming just to be pleased as a human being by a margin of 45%-35%. This shifts to an even split (40%-42%) among those forty-five to fifty-nine, and 34%-41% for those thirty to forty-four. By the time one gets to those under thirty, pride as an American (24%) is overshadowed by pleasure as a human being (46%). It is tempting to relate this to the fact that the scientific and technological competition with the former Soviet Union is more part of the experience of older Americans.

Still, the perceived importance of science to the nation is shown, even in this time when "the era of big government is over," by the fact that more than eight in ten agree (37% strongly, 45% somewhat) that "the federal government has an important role to play in encouraging new developments in science and technology."

research in universities and private companies" also got backing by most (43% a major emphasis, 38% a minor one). This was, however, an area where some 17% felt the federal government should have no role at all (compared to 11% for directly doing research, and 9% for supporting university and private research).

One explanation for a focus on partnership may be the fact that there is only limited confidence in the federal government when it comes to "making decisions about important research." Only one in eight (12%) had a "great deal" of confidence in the federal government. While the largest group (46%) had "some," this left a large group (40%) which had "hardly any." The government did marginally worse than corporations, in where one in six (16%) had a lot of confidence, more than half (55%)

The survey found evidence that the public hopes for positive impact from scientific investment in ways that may not be directly anticipated. Space is no exception to this. Roughly half (48%) say the space program will make life back on earth better, because of the technological advances it brings about. One in three (32%) expect little impact one way or the other. Only one in six (17%) think it will make life here "worse because money was spent there instead of other ways." This helps to reinforce backing for future exploration on the grounds that most think it will not hurt and may well help things back on earth.

Religion and Science

A conflict has sometimes been claimed between religious affiliation and attitudes toward scientific progress. In broad strokes, this survey provides no evidence of that. Americans are shown to be very science-friendly. But the study also reveals a population to which religion is important. More than nine in ten (92%) profess some current religious affiliation. Roughly half (49%) claim to attend religious services "about once a week" or more frequently, while only one in five (18%) say they almost never attend.

More than eight in ten say that religion is either "very important" (57%) or "somewhat important" (27%) to their daily life. (While this is somewhat lower

among younger age groups, still roughly half of those forty-four or younger say religion is very important to them, and if one counts in those for whom it is somewhat important, the proportion is similar to what one finds for the older age groups.)

If religion were seen as opposed to science, such a population of Americans would display a good deal more fear of science, and a good deal less support for it than is clearly evident from this survey. Indeed, when those who claimed that religion had at least a modest importance to them were asked specifically about this potential conflict it fails to emerge in any meaningful way. Two thirds of all those polled (66%) said that "new developments in science" did not have much to do with their religious beliefs one way or the other. Among the small group which did think religion is either supported by or threatened by scientific discoveries, those who said that their beliefs were strengthened (15% of the sample) outnumbered those who said they were threatened (7%) by two to one.

A Broadly Supportive Public

This comprehensive study indicates that support for scientific and technological advancement rests on a broad tripod. Americans believe that—despite potential drawbacks—new discoveries will have a positive impact both on

their own day-to-day lives and more broadly on our society as a whole.

Beyond this, there is clearly an element of competition. If the United States is not a world leader, this is seen as having negative consequences for the society as a whole. The fear of falling behind is reinforced by the pride of being ahead, which remains an important factor even as the sharpness of Cold War-based competition abates.

Lastly, there is clearly a receptiveness to the idea that the United States simply ought, by virtue of our national character, to stand at the forefront of technological and scientific advance. "Wonder" and "excitement," when it comes to science as well as cold practicality, are central to the self-conception of Americans. The survey suggests that—even if every other society were to "freeze" scientific research—there would still be a following for matters scientific and mobilizable support for national endeavors (involving both the government and private sector) to advance the literal and figurative frontiers of science. This is not to say that support for each and every such effort will be automatic, nor that the three legs of the tripod apply equally to every specific area. But one can clearly say that America is fundamentally a science-friendly environment.

About the Survey: The National Study on Science & Technology was commissioned by the National Science and Technology Medals Foundation, underwritten by 3M and Proctor and Gamble. Special thanks are due to John R. Hocker, Executive Director of the Foundation. Some 1000 respondents were interviewed by telephone between May 31 and June 14, 1996.



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