

It necessarily and purposely omits much the greatest part of science, hence can only falsify the nature of science and can hardly be the best basis for unifying the sciences. I suggest that both the characterization of science as a whole and the unification of the various sciences can be most meaningfully sought

in quite the opposite direction, not through principles that apply to all phenomena but through phenomena to which all principles apply. Even in this necessarily summary discussion, I have, I believe, sufficiently indicated what those latter phenomena are: they are the phenomena of life.

Biology, then, is the science that stands at the center of all science. It is the science most directly aimed at science's major goal and most definitive of that goal. And it is here, in the field where all the principles of all the sciences are embodied, that science can truly become unified.

## Divergent Reactions to the Threat of War

A peace and a shelter group were studied to examine their different responses to the Berlin crisis.

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Different proposals for dealing with the threat of war had been offered and discussed but generally aroused little enthusiasm prior to the Berlin crisis. With the intensification of international tension during the summer and early fall of 1961 there was a rapid growth of interest in civil defense measures and a proliferation of groups concerned with peace. The desirability of fallout shelters became a focus of conflict between proponents of these different approaches, and controversy was widespread in Congress, among scientists, and at a community level. Within one homogeneous community these divergent viewpoints were expressed in the nearly simultaneous formation of two groups, one organized to build a fallout shelter, the other to oppose shelters. We studied these groups in order to understand the factors which had led them to adopt such different reactions to the threat of war.

The two groups that we studied were formed within the same suburban upper middle-class community, about 20 miles from San Francisco (1). This is a community of about 8000 people who live in new, single-family dwellings, most of them built by a single

developer in a contemporary architectural style. The first to form was the Organization for Atomic Survival in Suburbia (OASIS). Its members, who live fairly close to each other within the community, planned to build a private fallout shelter to accommodate a maximum of 100 people. A number of them were also active in promoting a program for construction of community fallout shelters in the public schools. Members of the second group, People for Peace, were originally brought together by their shared opposition to community shelters, but they described themselves as advocates of a "positive" program for peace, not just opponents of shelters.

People for Peace had 28 members and OASIS had 26 at the time of the study. A member was defined as anyone who attended more than one meeting. There were equal numbers of men and women in OASIS; there were twice as many women as men in People for Peace. Demographic data were similar for members of the two groups: most were in their mid-thirties, had more than one child, had at least finished college, and were earning between \$10,000 and \$15,000 a year. The fact that the

two groups were demographically similar, and came from a single small homogeneous community, enhances the significance of our comparison but also limits the extent to which our findings can be considered representative of other groups with similar purposes.

Less than a month after they had formed, these two groups were separately approached by a member of our research team and asked to participate in a research project. The six members of the research team had not worked together before, nor had any of us studied problems in the area of peace and war. We were, and remain, divided in our beliefs regarding civil defense and peace groups. These differences were purposely made explicit, and measurement techniques were arrived at jointly in an attempt to counteract the influence of any one bias. It was not possible, however, to compromise on the appropriate areas of inquiry. Instead, the domains of behavior sampled reflected our diverse hypotheses, stemming from the differing value orientations of the members of the research team. The tests covered attitudes about war and peace, more general opinions, personal characteristics, background and life history, and game and risk-taking behavior. Most of the tests were specifically devised for the study, although some parts were borrowed from other studies (2).

A member of the research team observed each meeting of the two groups from October 1961 to February 1962. In the second week of January 1962,

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individual tests were given at the homes of the group members, over a 4-day period. All members of the groups were tested except for one within each group. The testing session lasted more than 2 hours and included six self-administered objective tests and a semi-structured interview. Here we will not attempt to describe results for the different tests in detail but will give our more general findings (3).

In predicting the destructive effects of one nuclear weapon or in giving opinions about the results of a full-scale nuclear war, members of People for Peace gave larger figures than members of OASIS. While both groups overestimated the various indices of destruction from a 10-megaton surface blast [as evaluated on the basis of official figures (4)], People for Peace consistently gave larger figures than OASIS for radii of damage (5). People for Peace believed that a full-scale nuclear war would last only a matter of hours or days, that there would be no winners, that there would be over 80 million fatalities in the United States, and that it would take this country over 100 years to regain its prewar economic activity, while the Soviet Union would never fully recover. The OASIS group foresaw a war lasting weeks or months, with 70 million fatalities in the United States, and with the United States regaining its prewar level of economic activity within 15 years, as compared with 15 to 50 years for the Soviet Union. The OASIS group was evenly divided on the question of whether the United States, the Soviet Union, or no one would win a nuclear war. People for Peace thought a war would have a more direct local effect than OASIS thought it would have, as assessed in terms of predicted distance from the nearest nuclear blast, probability of having a member of one's own family killed or injured, and likelihood of one's water, gas, or electricity being disrupted. Both groups believed that nuclear, chemical, and biological weapons would be used against strategic, military, and population targets.

While members of People for Peace saw nuclear war as more disastrous than the OASIS group did, they also saw it as less probable. The majority in both groups believed that a nuclear war, should one come, was more than 2 years away but that the United States would probably be involved in wars like Korea within the next 2 years.

The groups differed in their opinions about the likelihood of accidental war and surprise attack by the Soviet Union. People for Peace saw accident as more of a danger than OASIS did, but OASIS saw surprise attack by the Soviets as more likely than People for Peace did. The groups agreed that there was about a fifty-fifty chance that a full-scale nuclear war would start either over Berlin or through the escalation of a small war. Both groups rejected the possibility that the United States would ever strike first, but both believed that there were some individuals and groups within our government who favored such a policy.

The OASIS group believed that a community shelter program was more desirable than a private shelter program, and that families should keep a gun in their shelters, while the peace group disagreed with both views. People for Peace thought that shelter building would make war more likely, while most members of OASIS thought that building shelters would neither increase nor decrease the probability of war. Only a minority in OASIS believed that shelter construction would decrease the chance of war. When asked to list the arguments that people might raise against the construction of fallout shelters, OASIS emphasized (i) cost; (ii) inadequacy; (iii) the possibility that shelter construction might provoke a war; and (iv) the view that shelter construction constituted a negative approach. People for Peace reversed the list, putting cost last and arguing that shelter construction constitutes a negative approach, might provoke war, and was inadequate. In listing the arguments in support of fallout shelters, both groups mentioned protection, survival, and the prevention of war.

The groups diverged more markedly in their attitudes toward United States foreign policy than in their view of the central purpose of the Soviet Union. The majority in both groups rejected both extreme positions regarding the Soviet Union—that it (i) is determined to overthrow the United States by subversion and war or (ii) wants to live in peace and has no aggressive intentions. Within this narrowed range of opinion, People for Peace held the more optimistic view, believing that the Soviet Union wants to prove its superiority but does not want a nuclear war. The OASIS group was divided: one-third agreed with the

peace group; one-third thought the Soviet Union is not *committed* to a war, not that it does not *want* a war; the remainder took the “harder” position, that the Soviet Union will not stop short of, or is preparing for, war.

Slightly more than half of the Peace group advocated that the United States take steps toward disarmament without awaiting agreement from the Soviet Union. The other half believed that this country should maintain a military deterrent but should also initiate activities designed to reduce tension and promote negotiation. The OASIS group was more divided. Half believed that the United States should maintain a deterrent but should also try to promote negotiation. A fourth of the group advocated a “harder” position—increased military spending or preparation for an eventual war. The other fourth advocated tension-reducing activities or steps toward disarmament without waiting for agreement.

In summary, the groups differed most clearly on questions which directly pertained to shelters. The OASIS group thought a shelter program would have little effect on the probability of war, while People for Peace believed shelter construction might provoke war. The groups held different views on both the probability of war and the magnitude of the disaster if war should occur. They agreed about the dangers posed by the Berlin crisis and by potential escalation of small wars, but OASIS worried about a Soviet surprise attack, People for Peace about an accidental war. The Peace group took a more optimistic view of the Soviet Union and wanted more change in U.S. policies. The OASIS group was divided on both questions: the majority took a middle position on the aggressiveness of the Soviet Union and supported present U.S. policies, but minorities within OASIS held opposing beliefs on both sides of this position, wanting either tougher or more conciliatory approaches toward the Soviet Union, viewing the Soviets as more hostile or friendly than the majority in their group believed them to be. The extent of overlap in the attitudes of People for Peace and OASIS toward the United States and the Soviet Union should be noted. About a third of the shelter group held the Peace group's view of the Soviet Union, and about a fourth of the shelter group held the view on U.S. foreign policies that was predominant in the Peace group.

## General Attitudes and Opinions

The People for Peace group was preponderantly Democratic in party affiliation, having only one independent and one Republican member. The OASIS group had equal numbers of Democrats and Republicans, and three independents. For President, members of People for Peace favored Stevenson, members of OASIS favored either Kennedy or Rockefeller.

People for Peace gave more extreme responses than OASIS in a survey of opinions, indicating either more agreement or more disagreement with various statements in the test. The groups showed, however, considerable agreement in a number of their opinions. Both supported federal aid to public education, fluoridation of the water in their county, and unification of East and West Germany into an arms-free United Nations protectorate. Both groups felt that people could be trusted, that there were important differences between socialism and communism, and that smoking was a cause of lung cancer.

Both groups favored medicare, federal support of birth control movements, consumer cooperatives, and allowing atheists to teach in the public schools, and both groups believed that "freedom riders" have not worsened the lot of the Negro in the South. However, the People for Peace group held these views more strongly than the OASIS group did.

The latter opposed, while People for Peace favored, admission of Communist China to the United Nations. People for Peace strongly favored selling grain to China, whereas the OASIS group was evenly divided on this issue, but both groups believed that the United States should remain in the United Nations if Communist China were admitted. Members of OASIS thought that there would always be war and conflict, "human nature being what it is," but the Peace group disagreed. The most marked difference between the groups was evident in the response to the statement, "subversion from within by American Communists constitutes a serious threat to our safety"; OASIS agreed, People for Peace disagreed.

Members of the two groups were asked to play a non-zero sum game, using imaginary money; they had a choice between competitive or cooperative alternatives. The groups showed similar behavior but gave different ex-

planations of their responses. Members of OASIS explained their choices by emphasizing a wish to minimize losses—for example, "I can only lose \$4 even if the worst happens." Members of People for Peace emphasized cooperation and mutuality—"We should each be ahead equally or our losses would be equal." Given a choice of bets, members of People for Peace chose long shots more frequently than members of OASIS did, preferring to risk little money with little chance of winning but with a big payoff, while OASIS members were ready to risk more money but with shorter odds.

In summary, while the groups disagreed on such questions as the danger posed by American Communists or how to treat Communist China, the overall results were striking because of the extent of agreement in political and social beliefs. Certainly the two groups do not represent a liberal-conservative alignment, even though on certain items the Peace group took a more liberal view than OASIS. It should also be noted that the division within OASIS that was found on attitudes toward United States foreign policies and toward the Soviet Union was again seen in political affiliations and attitudes, while the Peace group was more homogeneous.

## Personal Characteristics

Demographic data and life histories were similar for members of the two groups. Similarities were found regarding father's occupation, frequency of church attendance, military service, use of seat belts, number of speeding tickets received, frequency of driving above the speed limit, regularity of voting, leisure-time activities, insurance coverage, and funeral arrangements. Although there was similarity of present smoking behavior, more members of People for Peace than of OASIS had quit, or were planning to quit, smoking. The groups differed in religious affiliation: one-third of the members of OASIS were Catholics and one was a Jew, whereas one-fourth of the members of People for Peace were Jews, only one was a Catholic, and more members gave no religion. Most members of both groups reported infrequent church attendance. Members of People for Peace claimed to be more politically active and to read more books and magazines. They were more able to name sources of information about the issues of war and peace.

Differences of response between sexes and between groups emerged in a test in which the subject used 40 adjectives to describe his personality. Women in the Peace group portrayed themselves as idealistic, complicated, radical, and serious; not cold and inhibited, but impulsive and intuitive. In contrast, women in the OASIS group claimed to be conservative and uncomplicated, cautious and even distrustful, yet good-natured, optimistic, flexible, and warm. The Peace group man, in his own eyes, was outstanding in his idealism and radicalism. The OASIS man, on the other hand, saw himself as cautious and conservative. A Peace group man saw himself as trusting and, if not talkative, at least not silent. The OASIS man described himself as energetic and methodical, but not talkative. The extent of the differences in response between OASIS and Peace group men were about the same as the extent of the differences between OASIS and Peace group women. There was greater similarity between the self-appraisals of men and women of one group than between the appraisals of the like-sexed members of the two groups.

In addition to describing themselves, the members predicted how other members of their own group would respond to the adjectives. Members of both groups were reasonably accurate in estimating the degree of similarity between themselves and their group as a whole. Individual OASIS members perceived their own group as resourceful, realistic, and cautious; they overestimated (6) the degree to which other members of their group would describe themselves as aggressive, bold, cautious, courageous, conservative, complicated, and idealistic and underestimated the extent to which they would describe themselves as impulsive, cowardly, and irritable. Members of People for Peace perceived their own group as courageous, idealistic, radical, cooperative, individualistic, and serious; they overestimated the degree to which other members of their group would describe themselves as serious, courageous, energetic, methodical, and aggressive and underestimated the extent to which they would describe themselves as impulsive, irritable, optimistic, and silent.

When we summarize the results on personal characteristics, we find that the groups described themselves with very different adjectives, despite the fact that they had similar backgrounds. Interestingly, although our evidence concerning

their political and social beliefs did not justify categorizing the groups as liberal and conservative, this distinction seems to have been important to the members themselves in describing their own characteristics. People for Peace saw itself as radical; OASIS described itself as conservative.

### Impressions Concerning the Opposite Group

Each member of each group was asked not only to indicate his own opinions on certain matters but also to predict how the other group would answer. It was possible to derive a measure of the groups' perceptions of each other by comparing the predictions against the actual response. Both groups correctly predicted that the two groups would agree that smoking causes lung cancer and would disagree about the comparative value of community and private shelters, the advisability of having a gun in a shelter, and the view that there will always be war and conflict because of man's nature.

More important, however, was the fact that misperception was frequently demonstrated by both groups. The results shown in Table 1 reveal that the People for Peace group generally overestimated the actual differences between the two groups, while the OASIS group underestimated them.

Similar results were obtained by comparing predictions of the opposite group's selection of descriptive adjectives with the actual responses. The OASIS group correctly perceived that they were not very different from People for Peace, while People for Peace incorrectly predicted great differences. The OASIS group underestimated the differences between the groups, whereas People for Peace overestimated them. People for Peace described themselves as individualistic, but this was not predicted by OASIS. On the other hand, members of OASIS described themselves as silent, but this was not predicted by People for Peace. People for Peace predicted that members of OASIS would choose certain adjectives more often than they in fact did; these adjectives were *bold*, *methodical*, *serious*, *anxious*, *inhibited*, and *rigid*. People for Peace predicted that members of OASIS would choose other adjectives less often than they did; these were *cowardly*, *radical*, *silent*, and *trusting*. The errors of OASIS in predicting the responses of People

for Peace were surprising. They tended to describe members of the Peace group as more like OASIS members than they actually were and to underestimate the extent to which they would choose adjectives such as *radical*, *idealistic*, and *individualistic* to describe themselves. Members of OASIS predicted that People for Peace would describe themselves as slightly more conservative than the average community resident, whereas they in fact described themselves as much less conservative. However, many of the actual differences between the two groups were recognized by each.

Thus, systematic and consistent misperception was shown by both groups: OASIS did not recognize the extent of the differences between the groups, while People for Peace exaggerated them.

### Group Functioning

Information on group functioning was derived from an analysis of interview data and from observations of the groups during their meetings. Members of People for Peace reported more emotional involvement with their group and stated that joining the group had led to a moderate amount of change in their lives. Members of OASIS seemed to regard their group more as an instrument and said that joining it had not made much change in their lives. However, when asked to give their reasons for joining, OASIS members referred more often to inner concerns and family needs than People for Peace did; the latter spoke more often of the troubled world situation. People for Peace believed they could personally help to

Table 1. Data showing the accuracy of the two groups in predicting responses of the opposite group to statements in the social opinion survey.

Statement	Percentage of group that agreed with statement	
	OASIS	PFP
<i>Both groups accurate</i>		
The evidence indicates that smoking is at least one cause of lung cancer.	88	93
Human nature being what it is, there will always be war and conflict.	84	22
A community fallout shelter program is more desirable than a private fallout shelter program.	88	44
Families stocking their own fallout shelter would be well advised to include a gun.	68	37
<i>Both groups inaccurate:</i>		
<i>PFP overestimates difference between groups; OASIS underestimates difference</i>		
If Communist China is admitted to the U.N., the U.S. should pull out.	16	0
The U.S. government should permit the sale of our surplus grain (at world market prices) to Communist China.	56	89
Communist China should be admitted to the U.N.	40	100
The freedom riders have worsened the lot of Negroes in the South.	32	0
Consumer cooperatives have a deleterious effect on the national economy.	32	11
The U.S. Government should support birth control movements all over the world by supplying funds, information, supplies, and medical experts.	72	96
Atheists should not be prohibited from teaching in our public schools.	64	85
<i>PFP and OASIS overestimates difference between groups</i>		
The drinking water in this country should be fluoridated.	84	96
The federal government should not increase its financial contribution to public education.	24	11
There are no important differences between socialism and communism.	8	11
<i>OASIS accurate; PFP inaccurate: overestimates difference between groups</i>		
People can be trusted.	92	100
The U.S. Government should provide completely for the medical needs of every citizen over age 65.	71	81
The whole of Germany (East and West) should be united into an arms-free protectorate of the U.N.	72	74
<i>PFP accurate; OASIS inaccurate: underestimates difference between groups</i>		
Subversion from within by American Communists constitutes a serious threat to our safety.	74	7

prevent war, while over half of the OASIS members felt they could not exert any such influence. When asked what might lead them to adopt the opinions of the other group, OASIS members mentioned disarmament, proved inadequacy of shelters, or evidence that shelters would provoke a war. People for Peace said they would change their minds and adopt the views of OASIS if (i) there were a major change in the world situation which either made war more imminent or the Soviets more intransigent; (ii) shelters were proved to offer adequate protection; or (iii) they had evidence that the Soviet Union had shelters.

Both groups met every 2 or 3 weeks at members' homes over a period of 6 to 9 months. People for Peace was much more loosely organized than OASIS, and their meetings were quite informal. OASIS, on the other hand, followed parliamentary rules, took votes on almost every issue, and spent a good deal of time adopting by-laws and electing officers. Members of both groups expressed concern at first about possible economic reprisals if the membership became known. Each group spent a lot of time talking about the other, and feelings of opposition and antagonism were freely expressed. The OASIS group particularly resented pre-emption of the word *peace* by People for Peace, because this seemed to imply that prospective shelter builders were for war. Neither group attributed malignant motives to the other group by calling it Communist-inspired or war-mongering, but each group spoke of the other as being misguided, ignorant, or conformist.

## Discussion

The observed differences in beliefs and attitudes may well have been crucial in determining whether individuals joined People for Peace or OASIS. Certainly most of the distinguishing characteristics of each group were in keeping with the *raison d'être* of the group. For example, it was logical for those who believed that a nuclear war was imminent to join a shelter rather than a peace group. Similarly, the belief that, despite man's nature, war is not inevitable could easily lead to a decision to join a peace group.

Clinical interpretation of reported interests, activities, and self-descriptions suggests some basic personality differ-

ences between members of the two groups. People for Peace seem to be more active, more opinionated, more idealistic, more concerned with problems outside their immediate lives, and more likely to feel that they can change the world about them. Members of OASIS appear to be more pragmatic and down-to-earth, less involved with things removed from their everyday lives. They feel themselves less able to influence the course of world events, and therefore they rely on individual efforts to adjust to the dangers which may exist (7). The choice of the Peace or the shelter group would seem to evolve quite naturally from these different approaches to life. In handling their fears, OASIS members may characteristically project danger onto the environment and concern themselves with efforts to control the resulting external threat. People for Peace, on the other hand, seem to handle their concerns more by a "flight into activity," which by affirming their personal effectiveness diminishes their anxiety (8).

It is necessary to be cautious about these interpretations, however, since we tested these people *after*, not *before*, they joined their groups. It is quite possible that, at least for certain people or for certain opinions, action may have determined belief rather than the converse. The discrepancy in estimates of the destructive power of a single nuclear weapon, as given by members of the two groups, may illustrate the shaping of opinion through group involvement rather than a difference which existed prior to group membership. Similarly, the differences in group functioning may have had more to do with the tasks confronting the group than with basic differences in the members themselves. In fact, OASIS became less formal when it became clear that it would not be spending large sums of money but would work for a community shelter program. If the Peace group had decided that each of its members would contribute \$1000 to a joint peace activity its meetings might have become more formal and decisions might have been made with more caution. Perhaps here we might note, as an aside, our impression about the differences in the groups' tasks. While the shelter group had the advantage of a prescribed, concrete job at hand, they faced problems associated with the considerable financial commitment required. While joining the Peace group involved little financial commitment, its members were

more perplexed by the vagueness of their goals and had much more difficulty determining what they should do.

We considered the possibility that the differences between the groups may have been due more to the leaders than to the followers. Actually, just the reverse was found, upon analysis; in most respects the leaders of the two groups were more similar to each other than were the followers.

Examination of the results for individual members revealed that neither the far left nor the extreme right was very well represented. It is possible that individuals holding these more extreme positions had felt the need for action and had formed their own groups well before the crisis in the fall of 1961. Membership in either group was still, however, a deviant act, in view of the fact that most of the citizenry, although perhaps alarmed, did nothing. This may well explain many of the similarities in the life histories and opinions of the members. Membership, in either case, involved joining a group in response to an international crisis and being willing to sit through meetings twice a month, and these requirements may have attracted groups of people who were in many ways similar, regardless of whether the group focused on shelter building or on peace activities.

Apart from their views on issues directly related to peace, war, and shelters, the overlap between these two groups was striking. Even in the war-peace area there was considerable agreement. For example, the majority in both groups agreed with the statement that the United States should "increase efforts aimed at negotiating with the Soviet Union; initiate activities designed to reduce tension but still maintain military strength as a deterrent." While the two groups could not be appropriately designated liberal and conservative, it is interesting to note that the members used these terms to describe themselves. Despite their support of medicare, federal aid to education, and unification of East and West Germany as an arms-free United Nations protectorate, members of OASIS characterized themselves as conservative. Even more mystifying, OASIS predicted that the Peace group would describe itself as more conservative than OASIS. People for Peace shared with OASIS the misconception that shelter builders are conservative; again, such a relationship between support for a shelter program and conservative political

and social beliefs was not consistently demonstrated in our results.

We cannot explain these misperceptions. Do peace groups generally view their opponents as being totally unlike themselves? And why would a shelter group think a peace group was very much like itself? At the time of the study, at least, this shelter group certainly did not adhere to the stereotype that peace groups are left-wing or Communist-tainted. Perhaps these misperceptions were related to the degree to which each group thought it was expressing the dominant beliefs of the community, the nation, and government leaders. The Peace group, both at the time of its formation and throughout its existence, was explicitly in opposition to the official policies of the government and to many of the views given prominence in the mass media, at least regarding shelters. Might it not be natural for such a dissenting group to exaggerate its distinctiveness in an attempt to maintain internal cohesion and morale? On the other hand, at the time of its formation OASIS may have felt that it represented the coming sentiment of America, as expressed by the mass media and the administration. This feeling may have been bolstered by the active involvement of an Air Force officer, who was described by the other members as their major source of information about civil defense.

Do groups which see themselves as a vanguard, anticipating the attitudes of the total community, tend to think that everyone else is like themselves, even their avowed opponents? There is another and altogether different hypothesis: that in their misperception concerning the Peace group, members of OASIS were reacting to growing doubts as to whether they were in fact a vanguard, and were thus attempting to give evidence of the similarity of their group to the larger community. Perhaps by January 1962, when we tested the groups, OASIS was beginning to question the popularity of shelters and the extent of the administration's support. Just a week before, the much-publicized government pamphlet on fallout protection had been made available in post offices, not sent to individual homes; it was signed by the Secretary of Defense, not the President. While our data do not yield definite answers to the questions raised, they do suggest that each group's beliefs about its relationship to the larger community may have affected its perceptions concerning the other group.

## Epilogue

Some 7 months after the original testing the groups were again approached, in mid-August 1962. Arrangements were made to inform the groups of the results of the study, and also to retest them on selected questions.

The two groups had fared quite differently since we had last seen them. Reportedly, People for Peace had continued to meet at least once a month, had expanded its scope, and had recently held a series of town meetings on disarmament. The OASIS group, on the other hand, had not met for some months, and no more than four or five individuals were still actively interested. In describing the dissolution of their group, OASIS members reported that the lessening of tension had made them reluctant to spend the large sums involved in a private shelter, and that the possibility that community shelters would be built had also dissipated their interest.

The two groups responded quite differently to our offer to provide them with the original results and conduct a brief retest. Most of the OASIS members were unwilling to be retested under any conditions, making it clear that they wished to have nothing more to do with their group or the research study and refusing to explain the change in their attitudes. Only 10 out of the original 26 OASIS members cooperated in being retested and in discussing the results of the original study. Members of People for Peace, on the other hand, were intensely interested and cooperative. Twenty-six out of 28 were retested (the two who were not were confined in a hospital).

The groups' attitudes toward shelter building and its influence on the probability of war had not changed between January and August (the results for the OASIS group pertain only to the minority who consented to be retested). The OASIS group's estimate of the probability of war and of the extent of the disaster had not changed over the 7-month period. The People for Peace group's attitude on these two matters had changed between January and August. They saw war as somewhat more probable, and less disastrous. For this group the average estimate of fatalities in the United States from a nuclear attack dropped from 79 to 65 million. Estimates relative to distance from a nuclear blast remained unchanged for

both groups; People for Peace still thought the direct local effect would be greater than OASIS thought it would be.

The members were polled again on half of the statements listed in Table 1; each was asked to give his own opinion, to predict the average opinion of the other group; and to predict the opinion of the average community resident.

Overall, the points of view of the two groups during the 7 months had been stable. On only three items out of ten were there significant changes. Members of People for Peace took an even more favorable view of federal aid to education and medicare, while the opinion of OASIS members had shifted in the opposite direction. Members of both groups now saw subversion from within by American Communists as less of a threat to our safety than they had previously considered it.

Estimates of the opinion of the other group also remained fairly stable: OASIS continued to underestimate, and People for Peace to overestimate, the differences. When asked to predict the opinion of the average community resident (this had not been asked in the original testing), members of People for Peace predicted a view that deviated more widely from their own views than members of OASIS did.

After the retesting had been completed, the findings from the original study were given to the two groups, in separate meetings. We attempted to present the results in the manner most acceptable to the group in question, with the goal of reducing the misperceptions of each group concerning the other. The data were presented in very different sequences to the two groups; dissonant material was gently introduced within the context of more tolerable results. The representative from the research team truthfully reported himself to be in sympathy with the group and expressed his own surprise at some of the findings.

The two groups reacted quite differently to presentation of the results. The OASIS group did not seem greatly disturbed by the findings; if anything, they were reassured by the degree of similarity between the groups which was revealed. They were perplexed by the result which showed that they had rated People for Peace as conservative, and they had no clear or general explanation.



About four or five members of People for Peace seemed visibly distressed by our findings, an equal number seemed ready to make use of the results, while the remaining members gave little immediate indication of their reactions. Those who were upset seemed most disturbed by the evidence of similarity between the groups. Some members showed their disturbance by hearing the results incorrectly, denying or rationalizing them, or criticizing the research design. A few also displayed a competitive attitude toward OASIS, saying for example, "But they've folded and we're still going." An unwillingness to renounce their exaggerated conception of the opposing group seemed to underlie these reactions, as if the researchers had removed what had been a convenient enemy.

At least an equal number of the People for Peace group responded in the opposite fashion, making what appeared to be more constructive use of our findings. These members commented freely, in a partly self-critical fashion, on the possibility that their communication with the community might have been exclusive, narrowing their base of support. They seemed eager to discern the motivations for their misperceptions of OASIS and considered changes they might make in the activities of their own group. The difference in the responses of the two groups to the report of our findings

might have been expected, for there was little in the results presented that could have been disturbing to OASIS, and if any were disturbed, they were probably the members who refused to be retested.

### Conclusion

While the extent of similarity between the two groups was surprising, this similarity may have been due to the particular community studied and should not obscure the real differences which were found, which apparently remained fairly stable. The two groups differed not only in their beliefs about shelters but in their attitudes toward war, United States foreign policy, the motives of the Soviet Union, political affiliation and activity, risk-taking behavior, their own descriptions of themselves and of the opposite group, and a number of general social issues. Finally, each group had misperceptions about the other, one group exaggerating, the other under-rating, the differences.

In thinking about negotiation and communication between individuals from different nations, we are impressed at the ease with which these two groups from the same community, with similar backgrounds and responding to a common threat, could generate such extensive misperceptions (9).

### Notes

1. We are indebted to John A. Starkweather for pointing out the existence of these two groups and their potential interest.
2. Some of the questions used were taken from "The U.S. and the U.S.S.R." (1961), a study by Stephen B. Withey, Survey Research Center, University of Michigan. The adjectives used were selected from Harrison Gough's "Adjective Check List."
3. Except where indicated, there were no differences in results between sexes, and the results are not attributable to the difference in sex ratio for the two groups. Complete copies of the questionnaires and detailed presentation of results may be obtained from the authors.
4. The group scores were compared with figures given in "The Effects of Nuclear Weapons," prepared by the Department of Defense and published by the Atomic Energy Commission, June 1957. We thank Rear Admiral A. G. Cook (USN, Ret.), director of the San Francisco Disaster Corps, for making this and related material available to us.
5. Separate tests requiring estimation of the magnitude of various objects demonstrated that the difference in the evaluations of the effects of a nuclear weapon cannot be attributed to any difference in the general tendency of the groups to over- or underestimate.
6. In discussion of single items, "underestimation" and "overestimation" refer to the sign of the difference between predicted and actual values of the mean response. Members were not asked to evaluate similarities explicitly, but an implicit measure of assumed similarity was obtained by summing the squared differences between predicted and actual mean response over items. Actual similarities between two groups were estimated by summing squared differences between the mean responses of the groups to each item. In a discussion of similarity, "underestimation" and "overestimation" refer to a comparison between assumed similarity and actual similarity.
7. Kathleen Archibald suggested that the groups differed in their felt efficacy in dealing with their environment.
8. This interpretation was suggested in part by comments of Arthur Gladstone.
9. This article is based on a paper delivered at the American Psychological Association Convention, 1 September 1962. We thank the Committee for the Application of the Behavioral Sciences to the Strategies of Peace, which provided interviewers and aid in data analysis.

### NEWS AND COMMENT

## Congress: Session Will Take Up Variety of Issues Affecting Science, Education

The 88th Congress convened this week with an agenda that includes an unusually large number of issues that will directly affect people who work in the nation's scientific and educational institutions. These range from such major political questions as federal support for education to the relatively minor matter of imposing a tariff on electron microscopes. In addition, Congress will consider a variety of other

issues that have come to be of concern to sizable segments of the scientific and university communities, such as civil defense and the growth of the Arms Control and Disarmament Agency.

The political terrain over which these issues must pass defies precise or even reasonably accurate measurement, and it is a safe bet that many of those who are compelled, or feel compelled, to practice political fortune telling will

wish 6 months from now that public journals were printed with disappearing ink.

(Congress defies prediction by computer just as horse races do; in the latter case, it is because the computer can be told everything except what the owner whispers to the jockey. A similar information gap disrupts any attempt to figure out what 535 power-loving, ambitious, and independent legislators are going to do when they take up the nation's business.)

But some of the peaks and boundaries on the congressional scene are more or less visible, and they are as follows. Kennedy is today considerably "stronger" than he was 2 years ago when he laid his first program before Congress. He is stronger for a number of reasons, but principally because of the prestige that accrued to him from the successful outcome of the hair-raising Cuban missile episode. In the manner in which