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ABSTRACT

DAP is the acronym for a set of concepts and procedures that the members of any group can employ to refine their problemsolving skills and bring them to bear on real-life, day-to-day group needs. Based on a particular view of human beings, communication, and the process of inquiry, DAP involves the members of a group in generating and using three kinds of information: designative (D) about the "what is" state of some one or some thing; appraisive (A) about "what is preferred"; and prescriptive (P) that suggests what to do when discrepancies can be identified between "what is" and "what is preferred". As group members generate and use these three kinds of information, they move systematically through three different phases of the problemsolving process. They begin by identifying their individual and common problems clearly and specifically. They then develop plans or prescriptions for dealing with the most critical of these common problems; and they complete the cycle of problemsolving by implementing their plans, monitoring effects, and evaluating their success as joint problemsolving systems. The major interest of DAP is in finding ways to eliminate or reduce unnecessary and pointless conflict, misunderstanding, and frustration. (Author)

# Group Problem Solving: The D•A•P Approach

John M. Nagle
James H. Balderson

A Final Project Report from the
Center for Educational Policy and Management

Eugene, Oregon
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The Center for Educational Policy and Management was established on July 1, 1973. Based on a common orientation to the formation of educational policy and to the management of educational institutions, five already existing units at the University of Oregon form the base for the Center's three divisions. The Center for the Advanced Study of Educational Administration provides the backbone for the Research and Development Division; educational administration, higher education, and educational policy are the degree program areas within the Division of Instruction and Field Services; and the ERIC Clearinghouse on Educational Management is the major unit in the Information Services Division.

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# Foreword

*Problem solving.* From Aristotle to Dewey to Churchman, that has been the essential element in individual growth and effective group functioning. Despite the volumes of rhetoric devoted to the topic, however, groups in general, and school faculties in particular, continue to countenance difficulties in their attempts to define and solve the problems facing them. Consistently, problems tend to be defined more in terms of prescriptions for action than as discrepancies between actual and desired states of affairs. Commonly, groups spend more time dealing with difficulties encountered in how they function than with the topics that brough them together, frequently without recognizing that those are separate issues.

The research reported here represents an attempt to develop a technology of problem solving and to devise training materials to increase the effectiveness of groups as they engage in problem solving activities. Unfortunately, attempts to secure funding to continue the research were unsuccessful. Nevertheless, it seemed important to share the early findings with others. It is just possible that this sharing will stimulate the continued development of the ideas contained herein.

The authors are both affiliated with the Center for Educational Policy and Management at the University of Oregon. John M. Nagle is a program director and James H. Balderson a research assistant in the center's research and development division (CASEA).

Max G. Abbott, Director

# Preface

DAP is the acronym for a set of concepts and procedures that the members of any group can employ to refine their problem-solving skills and bring them to bear on real-life, day-to-day group needs. Based upon a particular view of human beings, communication, and the process of inquiry, DAP involves the members of a group in generating and using three kinds of information: designative information (D) about the "what is" state of some one or some thing; comparable appraisive information (A) about "what is preferred;" and prescriptive information (P) that suggests what to do when discrepancies can be identified between "what is" and "what is preferred."

As group members generate and use these three kinds of information, they move systematically through three different phases of the problem-solving process. They begin by identifying their individual and common problems clearly and specifically. They then develop plans or prescriptions for dealing with the most critical of those common problems. And they complete the cycle of problem-solving by implementing their plans, monitoring effects, and evaluating their success as joint problem-solving systems.

This is certainly not to suggest that DAP is a guaranteed way for a group to solve all of its problems simply and without conflict. It is, however, a set of ideas and techniques that can help a group "smoke out" some of its most important problems, "unpack" them to manageable size, and then collectively develop plans for their solution. The major interest of DAP is in finding

ways to eliminate or reduce unnecessary and pointless conflict, misunderstanding, and frustration.

The DAP Project began in the spring of 1969 when Terry L. Eidell, then director of the Center's Instructional Materials Development Program, prepared the original proposal for its support. In June 1969, F. Lee Brissey and John M. Nagle, Center research associates, and Larry Craggs and Donald Drozda, graduate research assistants, were hired to staff the new project, each of them on a part-time basis. During the first year of work, these four individuals were able to devote time to the project equivalent to two full-time staff members. In July 1970, however, three of the four left the Center, sharply reducing the personnel support of the project throughout its remaining three years. To supplement the one remaining original staff member, the Center subcontracted with Dr. Brissey for work in some phases of the project between 1970 and 1972 and added James H. Balderson to the project's staff as a half-time graduate research assistant during the 1972-73 academic year.

As with any effort to develop concepts and procedures that are useful to others, the development of DAP owes a great deal to a number of groups and individuals—to the U. S. Office of Education for its four years of financial support; to Max G. Abbott and Terry L. Eidell for their Center support; to the three graduate research assistants who provided invaluable back-up support; to the nearly 500 individuals who listened to the ideas, participated in the processes, and provided us with extremely helpful reactions and suggestions; and, most important, to Lee Brissey, whose grasp of general systems theory served to undergird DAP throughout its development and testing.

In conclusion, while the inability to bring DAP to closure has certainly been disappointing, the oppor-

tunity to pursue ideas and procedures that are vital to any group's success as a fully integrated problem-solving system has indeed been exciting and, hopefully, as enlightening for others as it has been for us. If, for instance, this brief report stimulates and helps others to think more systematically about problem-solving in groups than they might otherwise, the four years will have had a satisfying pay-off.

John M. Nagle
Eugene
November 1973

# CHAPTER 1

## A Brief History

The original proposal for the Center's DAP project, prepared in the spring of 1969, was based upon several assumptions about schools and the people who work in them. It assumed, first, that a school is—or should be—a purposive organization. Second, it assumed that a school's success and viability depend substantially upon its ability to be a fully adaptive system. And third, it assumed that to be adaptive or self-corrective, both a school as an organization and the groups and individuals within it must continuously behave self-reflectively, identifying their most critical needs and devising procedures for dealing effectively with those needs:

Guided by these assumptions, the ultimate objectives of the proposed project were threefold:

1. to derive from the literature and research on group processes and problem-solving a repertoire of tested techniques that can be translated into packages of instructional materials for use with intact school staff groups to improve their skills in solving convening and emergent problems;
2. to actually produce these packages of instructional materials;
3. to develop a program for training consultants who can use the instructional materials with actual intact groups in school settings.[1]

[1] Center for the Advanced Study of Educational Administration, *Program Plan and Budget Request*, Volume 1, Program Plan (Eugene: CASEA, October 15, 1970), P. 76.

Between June 1969 and July 1972, the staff of the project completed approximately half of the originally proposed scope of work: they developed a set of concepts, operations, and materials relevant to group problem-solving, labeled the product "the DAP approach to joint problem-solving," tested it with a number of groups and individuals, and refined it for field-testing. However, the final planned phase of the project—production of multiple sets of the materials, training of consultants, and a summative evaluation of the DAP approach to group problem-solving—has not been and is not likely to be completed. In December 1972, as a result of its comprehensive assessment of ongoing R and D projects, the National Institute of Education (NIE), the Center's primary funding source for research and development, ordered that the DAP project be terminated by June 1973.

A brief history of the project can be divided into three major segments of activity: (1) approximately three years of developmental work on the DAP concepts, operations, and materials; (2) six months of work preparing the prototype materials for production and developing detailed plans for the field-test; and (3) a final six months of activities related to phasing out the project.

*Developmental Work: July 1969-June 1972*

During the summer and fall of 1969, the staff of the project surveyed the literature on organizational problem-solving, group processes, communication, general systems theory, and related topics, seeking to identify tested concepts and techniques that could be used to help groups in schools identify and cope with their most critical, common problems. In late fall 1969, however, given the complexity of ideas discovered and the relative dearth of adequately tested techniques, the staff revised its strategy for achieving the project's objectives. Rather than derive group techniques eclec-

tically from other sources, the staff decided to develop and to test its own conceptual framework, set of procedures, and array of materials for group problem-solving by building, at least initially, upon an earlier related CASEA research project conducted by Brissey, Hills, and Fosmire.[2]

For the next two and one-half years, therefore, the staff of the DAP project became heavily involved in a range of developmental activities. These included (1) continuing to monitor relevant literature; (2) attempting to conceptualize carefully what it means for one to have a problem or need; (3) developing procedures that an intact work group in a school (e.g., a teaching team, a subject-matter department, or a school faculty) might employ to identify and cope with their most critical, common problems; (4) developing written and audio-visual materials to explain and facilitate the specific procedures being developed; and, perhaps most important, (5) pilot-testing with intact work groups in schools many of the concepts, operations, and materials that were gradually evolving. Chapter 2 of this report presents a summary of the basic concepts underlying DAP—its particular view of human beings, organizations, communications, problems, and the processes involved in both individual and organizational problem-solving. Chapter 3 summarizes the procedures that a group employs as it moves systematically through the DAP problem-solving process.

During the project's three years of developmental activity, project staff members took advantage of nearly a dozen opportunities to expose others to the ideas that were being developed and to test with them both the procedures and the materials that supported those ideas. Most of the project's pilot-test situations, which

[2] F. Lee Brissey, Jean Hills, and Fred Fosmire, *Problems, Problem-Solving, and Human Communications:* A Laboratory Approach to Training in Interpersonal Communication. A Technical Report for CASEA and the Air Force Office of Scientific Research, 1969.

are summarized in Table A, provided the staff with an opportunity to test only Phase I of the total DAP process, the phase that involves a group in identifying, refining, and assigning priorities to its current problems or needs. In only three of the pilot-test situations were staff members able to spend sufficient time with a group to move it beyond the identification of critical problems to the actual development and implementation of plans to meet those problems. The groups involved in these pilot-test situations included graduate students, teaching teams, school faculties, university departments, and administrative cabinets. Chapter 4 of this report presents the results of a follow-up survey of 74 individuals who participated in one or more of these pilot-test situations. The survey, conducted in spring 1973, attempted to discover how, if at all, the DAP process and its products had been useful to them either during the actual pilot-test experience or subsequent to it.

Throughout the three-year developmental period, "The DAP Consultant's Manual for a Systematic Approach to Joint Problem-Solving," became the central vehicle for explaining DAP and for monitoring changes and refinements in both its conceptual framework and its group procedures.[3] A first draft of the "Manual" was prepared in June 1970. By June 1971, it had been thoroughly revised, and in June 1972, it was revised yet again for a two-week summer school course conducted for graduate students at the University of Oregon. By the end of the summer of 1972, three years after beginning the project, the DAP concepts and operations described in the third draft of the "Manual" seemed to be sufficiently well developed and pilot-tested to justify moving into the final major phase of the project:

[3] F. Lee Brissey and John M. Nagle, *The DAP Consultant's Manual for a Systematic Approach to Joint Problem-Solving* (Eugene: Center for the Advanced Study of Educational Administraction, University of Oregon, 1970, 1971, 1972), mimeographed, out of print.

# Table A: A List of the Pilot-Test Uses of DAP Between 1969 and 1972

| Pilot-test Number | Approximate Dates | Nature and Location of the Group and Frequency of Sessions | Phases/Activities of DAP Tested | Number of Participants |
|---|---|---|---|---|
| 1 | 10/69-12/69 | Masters degree students in a teacher education program, University of Oregon. (twice a week for one quarter) | Tested some of the initial concepts with participants; also developed initial DAP procedures for problem-identification. | 18-20 |
| *2 | 2/70-5/70 | Entire staff of an elementary school in the Eugene Public Schools, Eugene, Oregon. (once a week after school for three months) | Tested some of the revised concepts about individual and group problem-solving systems; also tested procedures for identifying problems, selecting those to be worked on, and moving toward solutions. | 18-20 |
| *3 | 10/70-1/71 | Two elementary school teaching teams in the Salem Public Schools, Salem, Oregon. (once a week after school for four months) | Pilot-tested all of the DAP concepts, procedures, and materials as they were then developed and so involved the two teaching teams in the first version of Phases I, II, and III of the DAP joint problem-solving process. | 14-16 |
| 4 | 10/70 | Department of Special Education, University of Oregon. (a one-day workshop) | Tested Phase I procedures (problem identification, refinement, and prioritizing) with the entire staff of the department. | 45-50 |
| 5 | 1/71-2/71 | Masters degree students in the Department of Educational Administration, University of British Columbia. (during the initial sessions of a university course) | Employed parts of all three phases of DAP to help students define the goals and content of their masters degree programs. | 12-16 |
| *6 | 5/71 | Groups of administrators and teachers from twenty-one schools in Shelby County Schools, Memphis, Tennessee. (six hours per group during a one-week inservice workshop) | Tested Phase I concepts, procedures, and materials with each of the twenty-one groups in an effort to help them identify and talk about their most pressing problems within each school building. | 120-130 |

## (Table A continued)

| Pilot-test Number | Approximate Dates | Nature and Location of the Group and Frequency of Sessions | Phases/Activities of DAP Tested | Number of Participants |
|---|---|---|---|---|
| *7 | 6/71 | Principals and teachers from the Salem Public Schools, Salem, Oregon. (a one-week, thirty-five-hour workshop) | Conducted an intensive review of the DAP concepts, procedures and materials as they then were; involved discussion and reaction, simulation of the phases, and suggestions for materials revision. | 12-14 |
| 8 | 11/71 | Department of Curriculum and Instruction, University of Oregon. (a one-day workshop) | Employed Phase I procedures (problem identification, refinement, and prioritizing) to help the staff redefine its most pressing needs. | 30-35 |
| 9 | 11/71 | Dean's Administrative Cabinet, College of Education, University of Oregon. (a one-day session) | Employed Phase I procedures (problem identification, refinement, and prioritizing) to help the Cabinet redefine the most pressing needs of the College. | 12-14 |
| *10 | 1/72 | The entire faculty of Windemere High School in Vancouver, British Columbia. (a one-day session) | Employed Phase I to assist the staff in its need to define curricular, instructional, and administrative goals of the school. | 80-90 |
| *11 | 3/72 | The entire staffs of the two high school correctional institutions in Oregon. (a two-day session) | Tested in a large group setting Phase I and II of DAP in an effort to help the staffs of the two schools identify their most critical common problems and begin to pose solutions to fourteen of those problems. | 75-85 |
| *12 | 6/72 | Summer school students at the University of Oregon. (four hours per day for two weeks) | Conducted a final intensive review of the DAP concepts, procedures, and materials prior to preparation of the final prototype; involved discussion and reaction, simulation of the phases, and suggestions for refinement. | 14-16 |

* Participants in each of these seven pilot-test situations were included in the survey conducted in spring 1973, and described in Chapter 4.

an intensive field-test of DAP in a significantly large number of sites.

### *Preparation for Production and Field Test: July-November 1972*

Between July and November 1972, the staff of the project shifted attention from developmental work to preparation of a careful field-test of the DAP prototype procedures and materials. In their April 1972 proposal to NIE for funds to continue the work begun in 1969, and then again in the October 1972 addendum to that proposal, staff members described the need for a field-test as follows:

> The effective operation of schools depends considerably on the ability of students, teachers, administrators, and support personnel to "smoke out" their most important common problems, "unpack" them to manageable size, and then collectively develop and implement plans for their solution. Three years of work in CASEA's DAP Project have produced (1) a conceptualization of the problem-solving process in terms of designative (D), appraisive (A), and prescriptive (P) inquiry; and (2) a prototype set of procedures and materials that a consultant can use to facilitate a group's problem-solving efforts.
>
> As part of this developmental effort, program personnel have tested all or part of the DAP concepts, procedures, and materials with over 500 individuals from a variety of educational organizations. Both formal and informal reactions to these pilot-test situations have been sufficiently positive to warrant continued refinement of DAP . . . .
>
> The critical need now . . . is for a summative, field-test evaluation of DAP.[4]

More specifically, the staff of the program identified five questions about DAP that needed to be answered.

[4] *Revised Basic Program Plan for Program R1506: Evaluating DAP* (Eugene: Center for the Advanced Study of Educational Administration, University of Oregon, 1972), mimeographed.

The first three were clearly evaluative; the last two were primarily of research interest.

1. Of what value are the DAP concepts, procedures, and materials and to whom?
2. Can these materials be used to train individuals to be DAP process coordinators and to employ its concepts and materials in group setting?
3. Can these trained process coordinators then use the DAP concepts, procedures, and materials to help groups in schools identify, prioritize, and solve their most critical, common problems?
4. Is DAP more applicable to some kinds of groups found in schools than to others?
5. And what differences result if the DAP process coordinator is a regular member of the group, rather than a consultant to it or an administrator of it?

To conduct the field-test, the staff of the project proposed to identify 20-25 individuals currently employed in administrative positions in schools and 20-25 individuals currently employed in non-administrative positions. Each of these 40-50 individuals would be prepared to serve as a DAP process coordinator, and, during the 1973-74 school year, he would be asked to employ the DAP concepts, operations, and materials with either his own or other groups. Throughout the year, evaluative and research data relevant to the questions raised earlier would be collected by members of the project's staff, analyzed periodically, and used to prepare a summative evaluation report on DAP. Not only would the field-test allow the staff to complete the scope of work originally proposed in 1969, but it would also add an important evaluative dimension to the project.

In addition to planning specifically for the field-test, the staff devoted the last six months of 1972 to preparing the DAP prototype materials for production. They attempted to derive from the "Manual," which had

already proven to be extremely helpful, a set of written and audio-visual materials that a trained DAP process coordinator could employ as he worked with his own or with some other group. As described to NIE, these materials were expected to include the following:

- Three *Manuals* for the DAP Process Coordinator

  1. "The Human Being, Communication, and Problem-Solving" (a discussion of what it means to behave as a process coordinator; the distinction between *process* and *content* consulting; human beings as problem-solving systems; the five levels of communicative contact; joint inquiry in groups; and the logic and psychology of the problem-solving process)
  2. "The DAP Operations and Procedures" (descriptions of the three major phases and the different activities within each phase of the joint problem-solving process; procedural instructions to the coordinator; procedural instructions to group members; materials for groups; and masters for overhead projection)
  3. "The Levels and Modes of Interpersonal Communication" (a more conceptual treatment of the problem-solving process in groups and of the ideas introduced in the first "Manual" for a DAP process coordinator)

- Five Filmstrips with Accompanying Audio Tapes

  (audio-visual descriptions of the basic DAP concepts relevant to human beings, communication, organizations, problem-solving, and the DAP problem-solving process itself)

- A *Handbook* for Group Members

  (including introductory comments, transcriptions of the filmstrip tapes, selected illustrations, descriptions of each phase in the DAP process, and directions for each group activity)

In effect, the staff of the project expected to design a total array of materials for both DAP coordinators and the groups with which they would be working.

*Phase-Out Activities: December 1972-June 1973*

In November 1972, NIE instructed the Center to terminate the DAP project by June 1973. In the "Curtailment and Phase-Out Plan" submitted in mid-January 1973, the staff of the project concluded that, given the inadequacy of the phase-out budget to support completion of the proposed field-test, phase-out money could best be used to prepare a final report, one that summarized the project's efforts to date and provided the best information available on the DAP concepts and materials and on their potential uses. More specifically, the staff outlined a final report that would include:

(1) a history of the development of the DAP concepts and procedures, including a description of the materials as they now stand;

(2) the conceptualization of DAP;

(3) a description of the DAP operating procedures;

(4) the results of a follow-up survey of the uses of the DAP procedures and of reactions to their use; and

(5) reflections on the DAP materials, including their potential for future development.

Because this document constitutes that *Final Report*, it should be emphasized that neither the DAP concepts nor their related operations have been adequately tested by individuals outside the project to warrant their being viewed—at this point, at least—as anything more than promising ideas and potential procedures relevant to group problem-solving.

# CHAPTER 2

## A Conceptual Overview

Supporting the DAP approach to problem-solving is a specific set of concepts about human beings, communication, groups and individuals, problems and needs, and the process of inquiry by which problems can be identified, and solutions can be developed and implemented. Although they have many sources, most of the concepts have their origins in the rapidly developing literature on general systems theory, human communication, and organizational development. More specifically, they build on three important assumptions:

(1) Group problem-solving involves individuals who are themselves fully integrated problem-solving systems.

(2) Both group and individual problem-solving involves processes that are potentially rational, structured, and systematic.

(3) The things that go wrong when groups try to identify and solve their problems are really not different in kind from the things that can go awry when individuals try to engage in those same activities.

### *The Human Being as a Problem-Solving System*

Generally speaking, man engages in a continuous search for satisfying relationships with the world in which he lives. One way to identify such relationships is to say that they exist when there is little appreciable difference between the *actual* conditions characteri-

zing a particular situation and those that are *preferred*. By the same token, man's relationship with the world in which he lives becomes less and less satisfying as he discovers more and more discrepancies between those *actual* and *preferred* conditions. By definition, therefore, each discrepancy between "is" and "ought" becomes for him a problem, and each effort to reduce or eliminate one of those discrepancies involves him in what we typically refer to as the process of problem-solving. When there is no longer a discrepancy between the two states, between "what is" and "what is preferred," man has proven himself, by definition, to be a successful problem-solver.

To discover the conditions that characterize a particular situation, man engages in a process that is usually idntified as *inquiry*.[5] Sometimes, he inquires about the actual conditions that characterize a situation or his relationship to it. Other times, he inquires about the preferred conditions that characterize the situation or his relationship to it. When the purpose of his inquiry is to discover *actual* conditions, he engages in *designative inquiry*, and the product of his inquiry is a set of *designative statements* that convey information about what is currently true, what was true in the past, or what is likely to be true in the future. On the other hand, when the object of his inquiry is to discover *preferred* conditions, he engages in *appraisive inquiry*. The product this time is a set of *appraisive statements* that, reflecting values and preferences, identify situations that either do or do not provide him with a sense of well-being, satisfaction, and pleasure.

[5] The following discussion of designative, appraisive, and prescriptive inquiry and messages is based upon the work of Charles Morris, *Signification and Significance* (Cambridge, Mass.: The M.I.T. Press, 1964). The relations among these activities are based upon the work of Donald McKay; see, for instance, "Towards an Information Flow of Human Behavior," *British Journal of Psychology* (1956), 47: 30-43.

Any situation or relationship can legitimately be the object of designative inquiry and the referent of designative messages or statements of fact. Simultaneously, it can be the object of appraisive inquiry and the *referent* of appraisive messages or statements of preference. Coupling these two forms of inquiry with the earlier definition of a problem, man may be said to have an actual or potential problem when his designative inquiry and his appraisive inquiry are addressed to the same referent and when they yield incompatible or discrepant messages. Viewed this way, problems can be considered to be a very normal and natural characteristic of life for any system. Moveover, it is precisely man's ability to identify his problems, encode them linguistically, and then develop solutions to them that enables him to adapt successfully to the constantly changing conditions that characterize the complex world around him.

All of which suggests yet a third kind of inquiry in which man typically engages, one that takes its cues from a discrepancy identified between "what is" and "what is preferred" and leads to the question "what to do?" For as he attempts to design a specific form of action for dealing with an identified discrepancy, man begins to engage in *prescriptive inquiry*. Sometimes the *prescriptive statements* that result involve adjusting his preferences; other times they suggest ways of modifying or manipulating the actual state of the world; and on still other occasions, they suggest that the best course of action is simply to accommodate to the discrepancy, either because it is really not very critical or because the discrepant conditions can be expected to change at some future time.

Often, of course, while a particular form of action may reduce one discrepancy in question and thereby count as a solution to that particular problem, it may also influence other related conditions, perhaps to the point of creating new problems. If, therefore, man is to

be a successful problem-solver, he must be able not only to generate potential prescriptions, but also to anticipate or project their consequences for both the problematic situation in question and for other related situations as well.

In summary, each of us as human beings can be viewed as a fully integrated problem-solving system, continuously engaged in inquiry and in a search for information about (1) the "what is" state of ourselves and the world around us, (2) the "what is preferred" state of those referents, and (3) "what to do" to reduce identified discrepancies between the two. Viewed this way, we as human beings are extremely complex systems for collecting, storing, and processing designative, appraisive, and prescriptive information about ourselves, others, and the world in which we live.

### *Joint Inquiry for Joint Problem-Solving*

Although man sometimes behaves as an autonomous problem-solver, he most often finds it useful to join or couple himself with others at various stages of inquiry, in a mutual effort to identify and reduce important discrepancies between "what is" and "what is preferred." This kind of joint inquiry almost always requires some form of external communication and thus the development of a common or group "nervous system" for exchanging designative, appraisive, and prescriptive information. Just as an impaired nervous system seriously weakens the problem-solving skills of an individual human being, impaired communication among individuals engaged in joint problem-solving significantly reduces the potential effectiveness of their collaborative efforts. Thus, when human beings come together in groups or organizations to solve problems, both the content and the effectiveness of their communicative processes become critical.

With respect to the content of communication, each member of the group needs to know what problems

face the group. He needs to know which of these problems have the highest priority for all group members. And, as he helps develop plans to solve particular problems, he needs to know not only the plan itself and what it entails, but also that every other member of the group shares this information as well.

Equally as important during a joint problem-solving effort as the content of communication among group members is the effectiveness of their communication. Evaluating communicative effectiveness requires, of course, some knowledge of the purposes and objectives that lie behind each communicative message. From one point of view, there are probably as many intentions for communicating as there are situations. At the same time, however, it seems reasonable to suggest that there are at least these five basic "levels of communicative contact," each with its own aim or objective and each logically prior to those that follow:

1. *Fidelity*, the most basic level in the hierarchy, is concerned primarily with getting one's message into the "nervous system" of another; therefore, if the recipient of the message can repeat it verbatim, effective communicative contact has been achieved at the level of fidelity.

2. *Understanding*, the next level of communicative contact, requires that the individuals involved have a common language—a common set of syntactic and semantic rules—or at least that their languages be clearly translatable. If "replication" is the key criterion at the level of fidelity, "meaning" is the key criterion at the level of understanding, and so paraphrasing becomes one of the most useful ways to test the effectiveness of communicative contact at this second level in the hierarchy.

3. *Acceptance*, the third level of communicative contact, involves a search for agreement or concurrence on the message, depending on the nature of the message. For example, acceptance of a designative assertion hinges on the question, "Do you agree that my assertion is a true description of what is?" By contrast, the appropriate question for an

appraisive assertion is, "Do you concur with my preference?" and for a prescription, "Do you agree that my proposed solution is likely to reduce the identified discrepancy between 'what is' and 'what is preferred'?"

4. *Relevance*, the fourth level in the hierarchy, focuses on the importance of the message to its recipient. It may be personally important to him. It may be important to some role he must play in a group. Or it may be important to the group as a whole. Any message, therefore, may be considered to be relevant on any or all of these three dimensions—self, role, or group.
5. And *commitment*, the fifth level of communicative contact, shifts attention from the linguistic characteristics of the message to its behavioral implications for the recipient. That is, even though he may be able to repeat it, even though he may understand and accept it, and even though he may regard it as highly relevant, if the message fails to influence the behavior of the recipient, communicative contact at this highest level in the hierarchy will not have been achieved; it will not have been translated from a linguistic message to a behavioral manifestation.

When two or more individuals agree to engage in joint inquiry to solve a common problem, each of these five levels of communicative effectiveness becomes appropriate at different stages in the process as they move from problem identification to plan development and, ultimately, to implementation and assessment of results.

### *The Process Itself: Logic and Psychology*

The classical treatment of problem-solving organizes the process into several discrete steps or phases of activity. Typically, these steps are ordered logically, such that each can be taken only after its preceding step has been properly executed. Accordingly, the *logic* of problem-solving begins with identification of the problem; moves through a series of intermediate steps designed to analyze the problem, assign priori-

ties to its parts, and zero in on its most important dimensions; and leads finally to the generation of alternative solutions and selection of specific solutions, implementation of the latter, and evaluation of results.

To speak of the *psychology* of problem-solving, however, is to say that the actual experience of identifying and working to solve problems is quite a different matter than that suggested by a purely logical dissection of its processes. For example, the logic of problem-solving suggests the advisability of analyzing a particular problem as completely and carefully as possible before either proposing or attempting solutions to it. On the other hand, the actual experience of solving problems indicates that solutions can frequently be attempted—and with beneficial effects—long before a detailed analysis of the motivating problem has been completed. In fact, the effort to assess the possible consequences of a particular solution often produces new information that clarifies and broadens understanding of the basic problem for which a solution is sought.

The problem-solving process, therefore, is psychologically a highly recursive one in which the phases or steps identified in its logical analysis may well be done, re-done, and re-done still again as subsequent steps generate new information and create a new need to return to preceding steps in the process. Viewed this way, the process emerges as one of evolutionary, cyclical movement from relatively vague, imprecise, and incomplete formulations of a problem-statement to increasingly refined conceptions of the problem, and ultimately, to some deliberate form of action to alleviate it.

### *Facilitation in Groups and Organizations*

As suggested earlier, when two or more individual problem-solving systems agree to organize themselves into groups for the purpose of identifying and solving their common problems, they become a higher order

problem-solving system. As such, they must develop the capacity to deal effectively with two quite different kinds of problems: some that can be identified as *convening* problems, and others that can be more usefully identified as *emergent* problems. A convening problem, as the name implies, relates to the *raison d'etre* of the group, its reason for being convened, its basic goal-attainment problem. On the other hand, emergent problems are those that evolve within the group itself or between it and its environment as its members attempt to deal with their convening problems.

While the members of a group may have some common understanding of the problem which they have been convened to solve, they are likely to have very little advance information about the additional problems that may emerge as they work to solve that convening problem. Lacking this information and, equally important, lacking systematic techniques for dealing effectively with most of their problems—whether convening or emergent—individual members of a group may well try to employ problem-solving strategies that simply exacerbate existing problems as well as create new ones. Consequently, just as an individual must be able to track, analyze, and solve his own critical problems if he is to survive as a healthy and effective problem-solving system, so too a group must be able to develop and maintain a variety of techniques for managing its "nervous system"—its own processes of interpersonal communication—as it engages in joint inquiry.

In particular, it must develop a way of exchanging designative, appraisive, and prescriptive messages. It must develop a way by which members can share information about themselves and can assure each other that their understanding of the task, the conditions bearing upon its accomplishment, and the nature of their coupling as a group is common to all other members. It must develop techniques for assessing, as a

total group, both the intended and actual levels of communicative effectiveness characterizing its deliberations at any particular time. Perhaps most critical, it must develop a way by which members can periodically suspend their problem-solving activity, become observers of the process rather than participants in it, and assess those characteristics of their interaction that facilitate joint inquiry and those that do not.

None of these techniques for managing a group's nervous system has much value, however, if it is employed unsystematically, or if it is unrelated to a real-time effort to engage in the problem-solving process itself. Group members must see that each step in the process requires particular kinds of communicative behavior and excludes others. For instance, proposing solutions to problems that have not been fully defined, evaluating contributions of members prematurely or on irrelevant grounds, or sharing opinions when the task at hand is to generate facts—each of these exemplifies a communicative behavior that can easily become a source of internal problems for a group and a handicap to effective joint inquiry. To work effectively together, all members of a group must have a shared conception of the problem-solving process in which they are involved and so a common basis for critiquing and, where necessary, for modifying that process. In this sense, a shared conception of the problem-solving process serves the members of a group the same way that a contract serves those who are a party to it: it defines for each individual what *he* and what *others* are expected to do, as well as *when* and *how* they are expected to do it.

This, then, is an overview of the concepts supporting the DAP joint problem-solving process—its view of the human being as a problem-solving system, the relationship between joint inquiry and joint problem-solving, the logic and the psychology of problem-solving, and its implications for groups and organizations.

# CHAPTER 3

## The Joint Problem-Solving Process

The DAP joint problem-solving process involves three phases of group interaction, the first two of which are divided into a number of sequential activities. These phases and activities, each of which can be thought of as posing specific sub-problems for a group to solve, are concerned principally with generating and using various kinds of information for keeping a group's nervous system in good working order. When each sub-problem has been handled effectively, the group will have evolved, implemented, and assessed a plan for solving—or at least for coping with—a particular problem or set of related problems. What follows is a brief description of the three major phases of activity in the DAP joint problem-solving process.

### *Phase One: Problem Identification*

The activities included in Phase I of the DAP process address themselves to the question, "What is the problem?" They help the members of a group identify a set of possible problems, encode them in a particular format as problem-statements, examine them for interpersonal understanding and acceptance, assess their importance, and then select the particular problem or cluster of related problems for which a solution will be sought. More specifically, this first phase consists of the following activities:

1.1 *The Problem Survey.* Group members begin by identifying and sharing information about the problems that they person-

ally have encountered or that they feel deserve the attention of the group. That is, group members are asked to volunteer brief statements about some feature, situation, or condition which is related to the group's activities and which for them constitutes a problem. The vehicle for this "tagging" operation is a relatively formalized problem-statement consisting of three parts: (a) a *referent* or topic about which the problem is concerned; (b) a *designative assertion* about the current or potential state of that referent; and (c) a comparable *appraisive assertion* about the preferred state of that same referent. To assure effective communicative contact at the level of fidelity, each of these individually generated problem-statements is recorded verbatim without discussion or argument, and the total array of problem-statements is publicly displayed for all group members to review.

1.2 *Achieving Interpersonal Understanding.* During this second activity, group members work to achieve maximum interpersonal understanding of the problem-statements generated during the problem survey. They do two things: first, they obtain from each member of the group an indication of his level of understanding of each problem-statement on the list; and second, based upon a display of those ratings, they discuss, paraphrase, and revise each statement in an effort to achieve the highest possible level of interpersonal understanding among all members of the group. The revised statements then become a written record of the group's search for understanding. While it is virtually impossible to remove all grounds for misunderstanding, it is certainly possible to eliminate the unnecessary and disabling effects of having two or more members of a group assume uncritically that they understand one another.

1.3 *Assessing Interpersonal Acceptance.* Once interpersonal understanding has been maximized, group members are ready to determine the degree to which each member accepts the problem-statements that he presumably now understands. "Acceptance" of the referent and its designative assertion means essentially that the group member has no reason to doubt the truth of the assertion regarding "what is." If he does, of course, now is his chance to raise questions, provide additional evidence, and generally assist his colleagues in increas-

ing the accuracy of that assertion. With respect to the referent and its appraisive assertion, acceptance means either that the group member shares that preference or that he can at least tolerate another group member's having that preference. If, however, the group member is totally unable to accept the preference, he is encouraged to discuss his reasons, not for the purpose of forcing others to accept his reasoning and his preferences, but in order to explain why he is unable to accept the particular preference being expressed. Once again, a record of each group member's degree of acceptance of each problem-statement provides data on the effectiveness of communication at this third level of communicative contact.

1.4 *Judging Importance.* During this fourth activity, group members share information about the relevance or importance of each problem-statement. That is, they individually assess the importance of finding a solution to each problem, first in terms of themselves, then in terms of their particular roles in the organization, and finally in terms of the organization itself. Given these three different ratings of importance, group members can then re-order the list of revised problem-statements from least to most important on any of the three dimensions.

1.5 *Selecting a Problem for Group Attention.* The product of the prior four activities in Phase I is a list of revised problem-statements, ordered in terms of importance and possibly clustered thematically on the basis of their substantive content. The final task in Phase I, requires the group to use all information at hand to select the particular problem or cluster of related problems that will receive the group's prescriptive attention in the second and third phase of the DAP process. To this point, communicative contact about the group's problem-statements has progressed from fidelity through understanding and acceptance to relevance. As group members deliberate now about which statements should be carried forward into Phase Two and given prescriptive attention, their communication addresses the question of *commitment.* This highest level of communicative contact is probably the most difficult to achieve, for its linguistic messages have significant implications for the behavior of group members, behavior designed to maintain or produce some desirable state. At this point, then, words take form in action.

Generally speaking, Phase One of the DAP joint problem-solving process represents a graded series of activities that are highly individualistic at the beginning and become increasingly consensual as group members move first to the identification of common problems, and then to the decision to function cooperatively to solve one or more of their common problems.

### *Phase Two: Plan Development*

Phase Two of the DAP process focuses on the joint design of a plan or proposed solution to solve the problem or cluster of problems selected for prescriptive attention. Group members begin by creating a pool of possible actions that might be taken. Using this pool of ideas, they develop a small number of detailed plans and attempt to predict the likely consequence of each if it were implemented. Finally, based on all available information, the members of the group decide which if any of their alternative plans they will actually implement. Just as the five levels of communicative contact guided deliberations in Phase One with respect to problem identification, so too they guide deliberations during Phase Two with respect to plan development. More specifically, the second phase of the DAP process consists of the following activities:

2.1 *Initial Planning.* Like the initial activity in Phase One, the first activity in Phase Two is essentially a production task. This time, however, it involves group members in generating a list of preliminary "do" statements, a list of potential prescriptions that, if operationalized, are likely to reduce the "is-ought" discrepancies described in the group's selected problem-statements. During this "brainstorming" activity, group members are encouraged to be innovative and creative, but they are also cautioned to refrain from premature judgments regarding the feasibility, cost, or practicality of any of the actions that may be proposed.

2.2 *Plan Design.* With the list of preliminary "do" statements before them, group members are then ready to "flesh-out" and

refine one or more detailed plans for coping with the identified problem or cluster of problems. The product of this effort should be complete descriptions and schedules of actions that might be taken, an indication of who will be responsible for each, a list of the non-human resources needed, an estimate of the likely consequences and the time required for each plan to yield satisfactory results, and an indication of the specific criteria and information that eventually would be used to determine the success of each potential plan.

2.3 *Deciding to Implement.* The final decision for the group to make is whether or not it will actually implement any of these alternative plans. Crucial to this decision is the individual commitment of group members to perform the behaviors called for by the plan, including—most importantly—the coordination of activities among all members of the group. Prior to deciding whether or not to implement, therefore, it is critical that group members fully understand each of the alternative plans and that they know the level of commitment of other members to them. Naturally, if there is evidence of low or questionable levels of group commitment to any one of the plans, attempting to implement it may be an unwise and unproductive step for the group to take.

## *Phase Three: Implementation and Assessment of Results*

The final phase of the DAP process calls for making the plan designed in Phase Two operational and for monitoring both its implementation and its results. As these two activities occur, two kinds of information become important to the group. One of these is information regarding the accuracy with which the plan is carried out—that is, the degree of "match" between the plan as a symbolic representation of intended action and the actual activities of the persons involved. The second kind of information desired is that which indicates the degree to which the specific actions taken during implementation aid or hinder solution of the problem or problems selected by the group for pre-

scriptive activity. In a sense, then, the information about results becomes useful in conducting a summative evalation of the group's total problem-solving effort.

In summary, the three phases of group activity in the DAP process, which take their cues from the concepts described briefly in Chapter 2, are designed to help groups and organizations function more effectively as fully integrated, self-corrective, problem-solving systems.

# CHAPTER 4

## A Survey of Pilot Session Participants

In the spring of 1973, staff members surveyed a number of the teachers and administrators who had participated in the DAP pilot-test situations between 1969 and 1972. The chapter presents a summary of the survey findings, including an indication of some post-session uses of DAP and some representative comments offered by survey participants.[6]

### *A Description of the Survey*

The survey consisted of both interviews and mailed requests for information. A total of seventy-four individuals were interviewed, representing seven of the twelve pilot-test situations, each of which has been noted in Table A of Chapter 1. Visits were made to nine schools in Tennessee, six in Oregon, and one in British Columbia. Letters were mailed to an additional thirteen participants of the last, most thorough pilot-test training session. In sum, a total of eighty-seven teachers and administrators were invited to participate in the survey; all but nine did so.

Regardless of whether they were personally interviewed or sent a mailed questionnaire, participants in the survey were reminded of the DAP sessions they had attended and were informed that the project was being phased out. Because each DAP pilot-test session had been somewhat different, given the continuing

[6] This survey of participants in seven of the twelve DAP pilot-tests was conducted by James Balderson.

development and revision of the DAP concepts, procedures, and materials, no attempt was made to see if respondents could recall the specific concepts or processes that had been presented to them. They were questioned, however, to determine, first, if they or their colleagues had made any use of the data generated during the DAP sessions and, second, if they had attempted to use or modify any portion of DAP in their subsequent work in or with groups.

## *A Summary of Findings*

Many of the respondents expressed favorable comments about the value of DAP and their experience with it. Likewise, some expressed a desire and willingness to undertake further training in the process. Several of those who viewed the DAP process most positively expressed disappointment that further developmental work had been curtailed.

Comments favorable to DAP centered around the utility of the process in (1) dealing with real problems currently affecting the participants in their organizations; (2) opening-up and promoting problem-related discussion among participants representing different levels and roles in an organization; and (3) making the transfer from a workshop setting to the day-to-day work carried out in a school. In addition, the DAP concepts and processes were seen by both administrators and teachers as a useful, non-threatening way to prepare for change.

These relatively favorable comments must be balanced, however, by other observations. No formal adoption and regular use of the DAP process was mentioned by any of the participants contacted—although, as indicated below, some parts of DAP were adapted and used by some participants to meet special needs. Furthermore, there was no clear indication that the problems identified during pilot-test sessions had ever

been followed-up in any systematic way, either by the teachers or by the administrators involved in the sessions. On this point, several participants remarked that their attempts to identify and formulate important problems during the DAP workshop had led them to expect that appropriate organizational changes would be taken to alleviate the problems, and that they, therefore, had been rather disappointed by the lack of subsequent action on the part of either teachers or administrators. One remark by a respondent about his experience with DAP seemed to characterize many of the participants surveyed: It was most unrealistic to expect, as many of his colleagues apparently did, that DAP would be a "magic formula" that could be used to overcome basic disagreement among some staff members on the values they held.

### *Some Post-Session Uses of DAP*

Respondents did report the following post-session uses of DAP—its concepts and its related group procedures for identifying and solving problems:

1. *To determine preferred operating conditions for a large, new high school.* A Program Committee, consisting of school district administrators and lay representatives, used procedures based on the DAP problem identification technique to formulate a ten-point guide for the functioning of a new high school. Working from a set of designative statements about schools and a comparable set of appraisive statements—both developed by individual committee members—the Program Committee was able as a group to develop an overall statement of the operating conditions that the administration and staff of the school should endeavor to create. Specific prescriptions for bringing about the preferred conditions were left, however, to the building's professional personnel.

2. *To formulate job descriptions.* Personnel in the

Department of Instruction of a large suburban school district used modified DAP procedures to identify important operating problems that arose during the reorganization of central office staff. The problems identified provided a valuable guide for the formal revision of job descriptions within the department. An assistant superintendent in the department reported that the DAP procedures "facilitated honest dialogue on a high professional plane" and provided "an excellent format within which to identify and discuss problems."

3. *To design new reporting procedures.* The staff of an elementary school used the DAP procedures to determine preferences for a new system of reporting to parents on the academic development and learning problems of their children. To the extent feasible, the school's actual reporting procedures were then altered to conform with the identified preferences.

4. *To improve communication among members of a teaching team.* Members of three teaching teams reported having used variations of the DAP process to promote more effective communication about the critical problems facing the teams. One team leader reported that "the levels of communicative contact" had been very useful to his team and that it had become "common" for members of his team to suggest, "Let's work a DAP on this item" whenever they seemed to be experiencing a communication problem.

5. *To obtain information for planning a new school facility.* One administrator indicated that, in preparation for working with architects who were designing a new building in the district, he planned to use a modified version of the DAP processes to determine the architectural preferences of the various individuals who would be using the building's various work areas.

6. *To develop a statement of school philosophy, goals, and objectives.* Portions of the DAP process were

used by a "faculty committee of a large secondary school to derive data from the school's staff, administrators, student body and its community of parents pertaining to desired school goals and objectives. These data were then used as a base for the inferential development of a statement of school philosophy.

### *Representative Comments*

The following brief notations and comments are a representative sample of those received during the survey:

- A principal who spoke highly of DAP and had recently participated in a DAP workshop with his staff indicated that neither he nor his staff had attempted to use the DAP procedures during a major reorganization of curriculum; instead, as he put it, they had "managed quite well" by the "usual muddling-through."
- A teacher reported that she used a "simplified DAP" with her class of primary pupils to identify playground behavior problems and to work out ways of solving them.
- A secondary principal expressed his desire to train members of his staff so that they could use DAP to improve students' problem-solving and decision-making skills.
- A teacher expressed the need for a trained DAP consultant at the building level if the procedures were to become part of a school's regular, formal approach to problem-solving.
- A leader of a teaching team for grades five and six reported using the "full cycle a couple of times" to deal with problems related to pupils and team interaction. He reported the process was "very helpful in getting it all out." He also indicated, however, that because DAP is a "fairly drawn-out process," some of his teachers did not want "to go through it all." He also thought the process was "far too long and drawn out for students to use."
- A principal reported that he did not use DAP in staff meetings because it "took too long to get anywhere;" at the same

time, however, he saw value in the process because "it gets everyone to work on the problem—not only the one with nerve enough to talk."

- A superintendent reported that the DAP workshop his staff had attended "was instrumental in bringing about some major changes." Exactly which changes were made because of DAP were not specified, but he felt many "incidental and tangential spin-offs of the workshop" had made it well worthwhile. This superintendent and two of his principals pressed the point that the DAP workshop's value stemmed from the ability of DAP to involve various members of the organization in identifying and analyzing "real live" problems. They specifically mentioned the superiority of the DAP workshop in comparison with two other staff training sessions they had undertaken which were not oriented to immediate and pressing problems, but rather to "sensitivity and awareness."
- A principal stated that, although DAP provided a great deal of staff input, "final decision-making remained, remains, and will remain with management."
- A principal commented on the therapeutic effect of DAP in that things that initially seemed a problem were cleared up because of DAP's technique of first establishing a clear and common understanding of the problem or problems under discussion.
- Many participants mentioned their difficulty in remembering the "technical terms" and suggested that the developers should "stick to common language."
- A teacher likened DAP to "participatory management techniques" in which "the staff feeds in data, but management decides." This remark was qualified somewhat by an additional comment that DAP "seemed to be a way to feed-in information without threat or intimidation."
- A principal stated, "We heard things as administrators that the staff had never told us before."
- A principal reported that when he "attempted to apply the complete process, [he] found group members 'cool' towards the details."

- A university department head reported, "The problem is time . . . It takes time to utilize the democratic methods of DAP, and time is a commodity which is in extremely short supply these days."

In conclusion, this informal, follow-up survey was designed to discover how—if at all—the DAP processes and its products had been useful to individuals participating in DAP pilot-test sessions between 1969 and 1972. The results are clearly mixed. If any general conclusion can be drawn, it is that DAP has yet to be proved either as a generally applicable process for identifying and solving problems, or as one that can and will be readily adopted by personnel in schools. This conclusion merely echoes, of course, the cautionary note expressed at the end of Chapter 1. Because the DAP concepts and its related operations have not yet been fully tested, their promising potential clearly remains to be further explored and developed.

# CHAPTER 5

## Reflections on DAP and Its Potential[7]

In his initial work on the subject, Norbert Wiener defined cybernetics as "the science of control and communication, in the animal and in the machine."[8] At the heart of cybernetics, therefore, is the notion of "steersmanship" or helmsmanship in goal-directed systems. To a considerable extent, the DAP joint problem-solving process, both its underlying conception and its accompanying procedures, represent an effort to apply these same notions of "steersmanship" to the work of human groups and organizations. We have tried to view the essential task of any system as one of adaptation, which in turn requires the identification, monitoring, and solving of particular kinds of problems in particular ways.

At the same time, we have tried to highlight the recursiveness of the problem-solving process—its cycles of identifying problems, developing and implementing plans, and evaluating solutions—and the distinction between the *psychology* and the *logic* of problem-solving. This distinction is essentially the same as that which is often drawn by philosophers between the context of *discovery* and the context of *verification*. The business of discovering problems and developing solu-

[7] Most of the ideas presented in this chapter have been adapted from a series of notes prepared by F. Lee Brissey for project staff in January 1972.

[8] Norbert Wiener, *Cybernetics* (Cambridge, Mass.: M.I.T. Press, 1948).

tions tends to occur inductively in the context of discovery; the business of testing solutions tends to occur deductively in the context of verification. Just as philosophers stress the impossibility of capturing the inductive process in rules of logic, so too we have avoided trying to construct a specific set of rules that capture the complex processes of generating and selecting information for problem-solving. Instead, we have tried to design a problem-solving process that capitalizes on the creativity of group members, but also forces them to apply the usual scientific rules of validation whenever they attempt to implement and evaluate solutions.

Between 1969 and 1972, as we developed, tested, refined, and re-tested the DAP concepts, procedures, and materials, we tended to think of DAP in its totality as a way of helping groups identify and solve their most critical common problems. Toward the end of the developmental process, however, we began to see that the DAP concepts and procedures could be adapted to serve a number of purposes other than pure problem-solving. Despite the fact that DAP has not been fully tested, it does seem useful and reasonable to describe briefly some of those other potential uses. Some are primarily prescriptive in nature, in that they serve to solve some particular problem; others are related more to designative inquiry and to generating information about "what is." Common to all, however, is the fundamental DAP conception of human beings, communications, joint inquiry, and the problem-solving process. Included among these potential uses are the following:

1. *Locating and defining organizational goals.* Organizations typically and frequently need to articulate their goals or, at a more abstract level, the philosophy that motivates their activities. This task certainly is, or at least should be, uppermost in the minds of those concerned with organizational management, if not with all who are involved in the organization. With some adaptation, Phase One of the DAP process, the set of

procedures for identifying problems, can be used to assist an organization in formulating its philosophy and goals. The usual approach to this task moves deductively from very abstract, non-operational, and non-extensionalized descriptions of some desired end to statements which, presumably at least, can be made increasingly specific and operational. By contrast, the DAP process starts with as many instances as possible of specific problems encountered by individuals in the organization. When these instances have been processed for understanding, acceptance, and relevance, they become the raw data—that is, the specific statements of preference for particular characteristics, components, or activities in the organization—from which goals can be inductively rather than deductively defined.

2. *Increasing interorganizational communication.* By virtue of its basic conception, the DAP joint problem-solving process requires that the members of a group or organization talk with one another at length about their perceptions of organizational reality on the one hand and their preferences for that reality on the other. Some members of the organizations in which DAP has been pilot-tested have observed that, whatever else may have been accomplished, their involvement in the process resulted in a significant increase in the amount of lateral and vertical communication within the organization. Some remarked, for instance, that DAP had provided them with the first real opportunity they had ever had to sit together and discuss the nature of their organization and their individual and collective experiences as members of it. Whether this increase in communicative traffic makes any real difference in a group's day-to-day functioning remains, of course, to be seen.

3. *Improving interorganizational communications.* Since the DAP model is based upon a particular view of interpersonal communication, the DAP procedures

themselves can be employed by a group simply to enhance its members' understanding of communication and their skills in managing the five levels of communicative contact. There is, after all, a significant difference between hearing what a fellow group member has said, understanding his message, agreeing with it, and regarding it as somehow important to oneself and others. Independent of its aid as a set of procedures for group problem-solving, therefore, the DAP process can provide group members with the language and skills necessary for handling and critiquing their efforts to engage in effective communication at each of the five levels of communicative contact.

4. *Identification of client needs.* To a large extent, schools, hospitals, and other social agencies can be thought of as service organizations, for they exist to meet the needs of some particular client population. It seems critical, therefore, that these needs be more than a matter of conjecture, speculation, or unverified inference. Phase One of the DAP process, the procedures for identifying group problems, can well be used by practitioners in a service organization to involve clients in identifying their most critical needs—needs that can then be used as a basis for designing and implementing specific programs of activities.

5. *Exposure of students to techniques.* If the DAP concepts and procedures can be useful for adults who function in organizations and groups, they should be equally useful to young people who find themselves just as often, if not more so, in groups and organizations. For example, the process can be introduced to students as an opportunity to explore and practice some of the critical techniques of group problem-solving and interpersonal communication; or they can be used as a vehicle and format for studying and sharing information about current social problems in the school, community, and nation.

6. *Providing organizations with useful techniques.* Any administrator has an important responsibility to understand the problems encountered by his subordinates, to facilitate development of appropriate solutions to those problems, and to communicate the results to others. Too often, however, an administrator has little more than casual observations, anecdotes, or highly formal reports from which to discern problems —none of which provide him with very systematic, valid, or reliable "snapshots" of his group or organization. More often than not, he simply lacks a systematic way to poll the views of others on critical issues. Phase One of DAP may be of help to him, for it can provide all members of a group or organization with a common view and language for identifying and solving problems, a legitimate opportunity and a specific way of engaging in organizational self-reflexive inquiry about "what is" and "what is preferred" in the organization, while at the same time encouraging and preserving the integrity of each individual voice. By engaging periodically in the Phase One problem identification procedures, organizational members can periodically assess any changes that may have occurred in their organization's "problem profile."

7. *Conducting of inquiries into problems, goals, and solutions.* This special kind of designative inquiry, again conducted by means of Phase One of the DAP process, involves the collection and analysis of information about the problems identified in different organizations or by different individuals in the same organization in an effort to identify patterns in those problems. For example, one may be interested in comparing the kinds of problems faced by individuals in the same or different organizations, in the same or different roles in comparable organizations, in the same or different professions, or in the same or different regions of a state or nation. He may be interested in

determining how the "problem profiles" for particular organizations change over time or in studying the homogeneity of objectives identified by different individuals in the same or different organizations. Or, on an entirely different dimension, he may be interested in studying the kinds of solutions posed by various groups to particular problems, and the eventual outcome of those solutions. Regardless of the specific focus of this designative inquiry, the DAP view of what constitutes a problem and its three major phases of problem-solving activity can provide any investigator wtih a relatively simple set of concepts and procedures for collecting comparative information about the problems and solutions identified by different members in different groups and organizations.

In sum, there are clearly a variety of potential uses of the DAP concepts and operations. Each needs to be carefully considered, however, in light of particular group needs. Hopefully, this report will encourage others interested in group problem-solving to utilize the DAP concepts and procedures and to develop them further. To the extent that this occurs, the past few years of developing, testing, and refining DAP will have been well worth the effort.

## *A Selected Bibliography Relevant to Systems Theory, Human Communication, and Group Problem-Solving*


Ashby, W. R. *Design for a Brain*. New York: Wiley, 1952.

Ashby, W. R. *An Introduction to Cybernetics*. New York: Wiley, 1966.

Bronowski, Jacob. *The Identity of Man*. Garden City, New York: The Natural History Press, 1966.

Buckley, Walter, ed. *Modern Systems Research for the Behavioral Scientist: A Sourcebook*. Chicago: Aldine Publishing, 1968.

Campbell, James H. and Hepler, Hal W., eds. *Dimensions in Communication: Readings*. Belmont, California: Wadsworth Publishing Company, 1965.

Cathcart, Robert S. and Samovar, Larry A., eds. *Small Group Communication: A Reader*. Dubuque, Iowa: Wm. C. Brown, 1970.

Cherry, Colin. *On Human Communication*. Second edition. Cambridge, Mass.: M.I.T. Press, 1966.

Churchman, C. W. *The Systems Approach*. New York: Delacorte, 1968.

Churchman, C. W. *The Design of Inquiring Systems: Basic Concepts and Organizations*. New York: Basic Books, 1971.

Emery, F. E. *Systems Thinking*. Harmondsworth, Middlesex, England: Penguin Books, 1969.

Gregory, Carl E. *The Management of Intelligence*. New York McGraw-Hill, 1967.

Maier, N. R. F. *Problem Solving and Creativity in Individuals and Groups*. Belmont, California: Brooks/Cole, 1970.

Morris, Charles W. *Signification and Significance*. Cambridge, Mass.: M.I.T. Press, 1964.

Newell, Allen, Simon, H. A. *Human Problem Solving*. Englewood Cliffs, N.J.: Prentice-Hall, 1972.

Reitman, W. R. *Cognition and Thought*. New York: Wiley, 1965.

Schein, Edgar H. *Organizational Psychology*. Englewood Cliffs: Prentice-Hall, 1965.

von Foerster, Heinz, *et al.*, eds. *Purposive Systems*. New York: Spartan Books, 1968.

Wiener, Norbert. *The Human Use of Human Beings: Cybernetics and Society*. New York: Houghton Mifflin, 1950.