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Long–Range Planning for ARI: A Metaplan

C. Alan Boneau

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This report presents an analysis of long-range planning for the Army Research Institute (ARI) and provides a detailed plan for incorporating such planning into the ARI management process. Long-range planning is viewed as a continuing management process that brings an orientation toward the future to bear on decisions relevant to choices among research directions and resource support for them. The plan to incorporate long-range planning anticipates the participation of top management in the development of alternatives and selection among them.

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Long-Range Planning for ARI:
A Metaplan

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Long-range planning is an activity in which every manager engages to some degree. A systematic concern for potential futures and their implications requires more than a casual involvement. Management initiatives must be taken to ensure that opportunities and challenges are anticipated sufficiently in advance so that reasoned decisions and appropriate actions will provide desirable trajectories into the future.

This Special Report represents an attempt to analyze the process of long-range planning as it might be applied to the management of a research and development (R&D) activity. The report provides a plan for performing the process at ARI. The process is seen to entail an evolution of management practice to be more systematically responsive to future-oriented concerns and issues.

EDGAR M. JOHNSON
Technical Director

LONG-RANGE PLANNING FOR ARI: A METAPLAN

EXECUTIVE SUMMARY

Requirement:

To provide a plan for long-range planning that is appropriate for an organization with the characteristics of ARI.

Procedure:

A literature review provided background philosophies of planning and examples of good and bad planning efforts. Procedures were selected to be both consistent with the ongoing and anticipated activities of ARI and congenial to current management. Possible outcomes of the planning process were generated by a blue-sky procedure.

Findings:

The first section of the Report contains a plan for planning--a Metaplan. It briefly discusses the process of strategic planning and identifies a series of tasks that should be undertaken more or less sequentially in initiating a strategic planning effort with a 15- to 20-year time frame. Planning is seen to have two faces, a substantive face involving military problems and scientific developments, and an organizational face involving the nature of the future organization that will be dealing with future substantive issues. Top management expertise and perspective is viewed as essential to planning in each of these domains. The report also describes the kinds of outputs that will emerge from each of the tasks. The tasks identified are as follows:

- Environmental scanning--identifies likely future events and trends in a broad array of areas that might affect ARI.

- Values/goals audit--enumerates goals and values that should guide the planning process.

- Mission formulation--states the ideal mission of the organization of the future.

- Contingency planning--identifies alternative future scenarios and/or strategies for dealing with them.

- Modeling the future organization--given likely scenarios, states what the organization should strive to become in the planning time frame.

- Modeling the future science base--given likely scenarios, states the requirements for the science base of the future.

- Current status analysis--assesses the current status of the organization and the science base with respect to a number of dimensions relevant to the planning process.

- Gap analysis--identifies areas in which changes must be made if the organization and the science base are to evolve into the future models and identifies strategies for closing the gaps.

- Integrating functional plans--identifies procedural steps and organizational changes required to convert planning decisions into operations.

- Implementation--makes operational the schedule of procedures and organizational changes identified above.

- Reconsideration of planning--provides for review of the plan and for updates to be incorporated into the implementation procedures. Reviews are conducted periodically.

Included as an appendix to the Metaplan is a detailed statement of work and a tentative schedule for the first, more intensive year of planning. It is intended to lay out specific tasks for the planning participants to provide guidance on how tasks are to be accomplished, to describe the outputs of the several phases, and to show how they are interconnected. A second appendix contains a sample of various outputs that might emerge as this planning process proceeds.

LONG-RANGE PLANNING FOR ARI: A METAPLAN

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LONG-RANGE PLANNING FOR ARI: A METAPLAN

INTRODUCTION

> There is unprecedented criticism of American business management
> throughout the world today. A great deal of this criticism is
> because of the short-term orientation of American managers....
> We hear a lot of alibis, but their preoccupation with short-term
> results and quantitative measures of performance were responsible
> for the neglect of the kinds of investments and innovations
> necessary to increase the nation's capacity to create wealth.
> (Naisbitt, 1982)

From this perspective, the top few levels of management of any organiza-
tion have two major responsibilities. One is to ensure an effective operational
status and satisfactory return on investment in the short term. The other,
and oft-neglected, responsibility is to find better ways to shepherd the re-
sources of the organization and shape its development in order to ensure that
it will be able to adapt even more effectively to changing conditions of the
future. The substantial investment made by the Army in ARI and the projected
outyear funding are intended to create a research capability that produces
directly usable research products in the present and raw materials in the form
of basic research results that may be applied to problems of the future. The
Naisbitt remark quoted above serves to remind us that the future health of the
organization is also a focus of management attention. Since it is always pos-
sible to do better, ARI should increase its concern for the kinds of investments
and innovations that are necessary to expand its capacity to create valuable
and appropriate research products. As a corollary, management should enhance
its capabilities for sensing future influences, for assessing their possible
impact and for creating strategies to make rational decisions that strike a
balance between the pulls of the present and those of the future.

Building effectively for the uncertain future requires a long-range strat-
egy for dealing with that future. Long-range planning is much more than an
attempt to predict the future. It is an active process, integrated into the
management process, that is intended to ensure insofar as possible that a de-
sirable future comes to pass. The participants in long-range planning have
control within the organization that they direct, and their management job is
to see that the organization knows where it is headed and how it is to get
there. Long-range planning is the vehicle for spelling out organizational
goals and strategies for achieving them. Long-range planning focuses upon the
kinds of actions that must be taken now in order to ensure that the planned-for
future happens. Steps must be initiated in the short term with the expectation
that their cumulative effect will approximate the long-term objectives estab-
lished by the planning process. Planning provides policy direction for all
ongoing activities. Every decision must be considered with respect to its
consistency with long-range planning objectives and strategy. Thus long-range
planning is an integral part of the management process. It is a process that
enables managers to manage wisely and effectively.

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The above discussion, which is summarized from a number of sources Helmer, 1983; Lorange, 1982; Tourangeau, 1981; Whitaker, 1978), provides clues for the seeming failure of past attempts by ARI to engage in long-range planning. For example, Letsky and Root were involved in 1982 in a major Institute-wide effort that resulted in much paper input but no apparent impact. Similar efforts organized by Holz in 1985 and Holman in 1986 also came to naught; this work also had no apparent effect on the Institute. A final activity of this kind to be noted here is a contractor effort called A Comprehensive MILCON Database for the ARI Laboratory of the Future, which was delivered in 1986. The ultimate impact of this document is uncertain.

A common element of these efforts is that they were carried out "bottom up," without direct management participation. The Letsky and Root project, for example, was done hurriedly and with little guidance from top management. The result of such efforts is generally minimal; according to a survey of corporate planning personnel, the factor contributing the most to planning failure is the lack of top-management involvement in the process (Steiner, 1976). Clearly, any Institute effort should be guided and influenced by the perspective and insight of top levels of management. This report provides a mechanism for satisfying this requirement.

Another feature of the past efforts is that they were all aimed at the development of a "plan." But the objective of planning is not to produce a document that can be ignored and forgotten. The purpose of long-range planning is to integrate a process of planning into management, a process that will go through many iterations as events unfold and the planning participants have their consciousness raised about the planning process and its relationship to external and internal developments.

PLANNING TO PLAN

This section describes the planning process: its objectives and tasks. The specific actions to be undertaken by the planning participants during the initiation phase of the planning process are described in Appendix A.

Long-range, or strategic, planning is a process by which the top leaders of an organization envision its future and take steps to ensure that that future comes to pass. Thus an organization can exert control over its own destiny. Long-range planning should be viewed as the first step in proactive management.

Strategic planning for ARI involves a consideration of two interlocking sets of issues: substantive and organizational.

- Substantive issues involve the specifics of the military problems and the behavioral science solutions that are to be planned for. What kinds and areas of research and development (R&D) are contemplated? What strategies should be employed in addressing knowledge gaps?

- Organizational issues involve the capabilities and characteristics of the organization that will be engaged in substantive R&D activities. What kinds of functions are contemplated, and what organizational structure seems appropriate to house them? What kinds of personnel,

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facilities, and other resources will be required to execute the contemplated R&D programs? What kinds of strategies are to be utilized to acquire those resources?

Top managers have primary responsibility for dealing with the organizational issues, for planning and creating the optimal organization to provide effective solutions to Army problems and issues. The general substantive nature of those future problems and issues must be foreseen, however, for the outlines of an optimal organization to be identified. The top managers of an organization, according to Strategic Systems Theory (SST) (Jaques, 1976), are likely to have the best long-range perspective on substantive issues; thus, they should have primary responsiblity for establishing the substantive parameters for planning as well.

A number of considerations for long-range planning must be addressed. These include the questions of what, who, and how.

- Strategic planning formats from various sources are fundamentally the same.
  (The one used here is from Pfeiffer, Goodstein, and Nolan, 1985).

- Planning participants: Several considerations implicate top management in the process.

  - There must be an organizational commitment to planning.

  - Top managers are responsible for the investment commitments made to the future.

  - According to SST theory, top managers should have the best view and grasp of the organization.

  - Planning accomplishes little or nothing without top management involvement.

Key organizational people must be involved on a continuing basis. At ARI the key people are the CO, the TD, and the Associate Directors. They should be provided with a staff to coordinate and organize the planning functions.

- Procedures: Procedures must be established so that a numoer of planning tasks may be accomplished. According to our planning model, the following steps have been identified for the planning process:

  - Environmental scanning.
  - Values/goals audit.
  - Mission formulation.
  - Modeling the future organization/science base.
  - Current status audit.
  - Gap analysis.
  - Contingency analysis.
  - Integrating functional plans.
  - Implementation.
  - Review and update.

● Follow-on: Long-range (strategic) planning is a continuing process that guides tactical (or short-range) planning. Initiation of strategic planning requires that the following activities take place:

- Environmental scanning on a continuing basis.

- Periodic review and revision of the strategic planning process.

- Development of tactical plans consistent with strategic planning considerations.

- Creation of mechanisms to ensure that management decisions are influenced by considerations of the future.

The strategic planning timeframe is taken to be from the present onward for 15 to 20 years. This allows time for activities that require a relatively long time to accomplish, such as the recruitment and development of the kinds of managerial talent needed for the future organization. Although the perspective of long-range, strategic planning is toward the future organization, activities in support of long-range goals must necessarily begin in the present. The necessary trajectories must be established as quickly as feasible.

Tasks To Be Accomplished by the Planning Participants

Environmental Scanning. This process identifies a variety of factors that may impact on the long-term operation of the organization and that should be dealt with both in initiating strategic planning activities and in revising them in the future. These factors focus on anticipated developments in the following sectors: social, economic, political, technological, military, and behavioral science. This activity is germane to both the organizational and substantive issues.

- Internal and external factors should be surveyed in depth on a continuing basis.

- A mechanism for ensuring that this function is carried out effectively should be part of the implementation plan.

- This function is also part of the ongoing planning process during the development of the initial plan. It is also a major input into later periodic reviews.

Output: A statement about likely futures that are the assumptions guiding the planning process. Consideration of alternatives is an essential part of the process.

Possible mechanisms for conducting environmental scanning: Talks or panel discussions by experts. Briefings by DOD and Army planners. Ongoing accumulation, digestion, and dissemination of relevant materials. Questionnaires to current and past knowledgable civilians and military personnel.

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Values/goals Audit. Such an audit examines the value and goal structure of the top managers, the values and goals of the organization, its philosophy of operation, its assumptions, and the values of the "stakeholders" (users and overseers). It is helpful to distinguish between present, ongoing values and those that might be facilitated by the planning process.

- Individual values. What do top management people value in terms of personal and professional goals, rewards and reinforcers, organizational climate, management style, and the like? What do they want the organization to be like?

- Organizational values. What sort of values and professional orientation should the organization represent and promulgate?

- Philosophy of Operations. Based on an examination of assumptions about the organization's relationship with other organizations, its employees, customers, overseers, and so on, this is a formal statement of the way the organization approaches its work.

- Organizational culture. The social environment in which the organization does its work includes physical facilities, the behavior of employees, the attitudes of employees toward the organization, and the like.

- "Stakeholder" analysis. Who are those individuals, groups, and organizations interested in the organization and impacted by long-range planning? What are their concerns, and to what extent should these concerns be reflected in planning?

Examples: Professionalism, conditions conducive to professional development and high scientific achievement, high degree of sensitivity to and understanding of Army issues and problems by all scientific personnel, etc.

Output: Statement identifying organizational values to be reflected in planning and their implications both for substantive and organizational planning.

Mission Formulation. A concise statement of the "business" the Institute conducts and the purpose or function the Institute is attempting to fulfill and should conduct in the future is necessary.

- What should the organization do, for whom, and how? What should be the driving forces on which these determinations depend? And what is the relative priority or importance of these driving forces?

- What distinctive competences should the organization possess? And to what end should these competences be utilized?

- How does the organization relate to and differentiate itself from other similar organizations, variously defined?

- Each unit should have its own mission statement, on a shorter time frame and coordinated with the statement of the total organization.

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For ARI, each lab, field unit and technical area should have its own mission statement.

Output: Mission statement with implications and amplification as needed.

Modeling the Future Organization Science Base: Objectives and Capabilities Formulation. This modeling involves the development of an understanding of what the organization expects to become in the planning time frame. What will it be like? How are the goals and values to be integrated into the vision? What kinds of capabilities will be required? What physical and personnel resources will it have? What kinds of functions and activities will it be engaged in? What kinds of structure will it have? This is also an opportunity to shape the substantive disciplines involved. What should the disciplines themselves look like? What kinds of developments in the supporting disciplines are to be encouraged and emphasized? What kinds are needed? What kinds of research products are likely for the future? What developments in science do they require?

- The modeling must be congruent with values and mission.

- The modeling is an attempt by the organization to determine its own future and is done in a context of anticipation of likely significant aspects of the future provided by environmental scanning.

Output: Statement describing the desired future organization through the end of the planning time frame. Statement describing the state of scientific and technical knowledge through the planning time frame. Statement detailing the scientific and military problems to be addressed.

Current Status Audit. This audit analyzes the current and recent activities and performance of the organization in order to understand capabilities, resources, and opportunities on a unit-by-unit basis. The questions addressed are these: Where are we now? What do we have to work with now? What kinds of trajectories are represented by our present activities and resources?

- The audit involves a consideration of current external factors and trends that impact on the organization and on the science base--a longitudinal perspective.

- The analysis represents a census of the existing organization and its activities and resources and makes use of existing documentation where possible.

Output: Statement identifying the current status of the organization and its activities to parallel the statement describing the future organization.

Gap Analysis. Such an analysis compares current position and status from the performance audit with that reflected in the model of the future organization and the model of the future science base.

- The magnitude of discrepancies and the likelihood and feasibility of aspects of the model of the future organization considered. Cost-benefit considerations may be involved.

- Resources and the kinds of steps required to achieve aspects of the model are examined.

- Major threats and opportunities for the organization are identified.

- As a result of this step, changes in the model of the future organization may be required to get back in touch with reality.

- If activities are required that are not currently being carried out, the analysis determines who is to do what.

Output: Statement that identifies areas in which changes are required to meet planning goals and that proposes strategies for meeting those goals. Considers both substantive and organizational issues.

Contingency Planning. In this step alternative futures are defined and evaluated with respect to their likelihood of occurrence.

- The generation of scenarios of likely opportunities or threats alternative to those planned for in the organization's model of the future but reasonably likely is critical.

- "Trigger points" or indicators that contingencies might be called for should be identified.

- The options should consider a variety of solutions.

- When appropriate, strategies should be developed for highly likely or highly significant alternative events.

Output: Statement of alternative future scenarios with associated likelihoods and strategies for dealing with them. Focus is on both substantive and organizational issues.

Integrating Functional Plans. In this phase, the strategic model is passed on to the functional units of the organization, which are each called upon to develop functional plans with budget and time table for execution. This would entail substantive planning through the POM years, that is, as represented in the annual ARI Science and Technology Plan.

- Each unit's plan is based on its own mission statement.

- Each unit's plan must be checked against the organization's model and the values and mission statements.

- Each plan must be understood by all other groups.

- The Program, Plans, and Operations (PP&O) Office will identify gaps in and among the combined plans and between these and long-range planning considerations and will propose how these will be closed, (that is, what is to be done and who is to do it).

- A final plan will integrate all the separate activities.

Output: Statement that proposes procedures, organizational changes, and a schedule of such changes as are required to implement this activity.

Implementation. This step involves making all the organizational and procedural changes that would evolve from the planning process to ensure that it is followed on a continuing basis.

- Management must ensure that strategic planning considerations exert an influence at decision points.

- The values and organizational climate supporting them must be made manifest.

- Tactical (S&T) planning and short-range programming must be coordinated with long-range planning.

- The implementation plan and process must also provide a structure and procedures to ensure that the planning process continues.

- Mechanisms for conducting periodic reviews and revisions of the strategic planning assumptions should be established.

Output: Set of ARI Regulations and related documents that initiates required changes in procedures and organization.

Review and Update. This activity is intended to introduce into the planning process necessary changes that may result from changes in the organization or in any of the factors that impact on it. The process involves a consideration of all of the steps in the planning process considered above to determine whether or not changes should be made in the existing statements that have emerged in the consideration of the future with its potential impact on the organization and its potential opportunities to increase the effectiveness of the Institute.

- Provision should be made for a regular periodic review of the main statements and conclusions to assess their general adequacy in light of incremental changes in the organization and its environment.

- Provision should also be made for an extraordinary review when important changes trigger a consideration of contingencies.

- Continuation of environmental scanning is required as input to this process.

Output: Aperiodic statements that update one or more of the previous planning statements.

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APPENDIX A: SCHEDULE AND WORKPLAN FOR ARI LONG-RANGE PLANNING

This section will consist of a proposed schedule of activities that will result in the initiation of the long-range planning process over the course of a year.   In essence it will consist of a list of the tasks and a schedule of meetings to address them.   In addition, the document will spell out the proposed staffing and the statement of associated duties.   The chief staff task will be to prepare action agendas and background materials for meetings, to keep meetings on track so that objectives for each meeting may be achieved, and to follow up on and implement any decisions made by the planning participants.

Although this section deals primarily with the first year of planning activities, it is to be recognized that implementation entails the establishment of mechanisms that will integrate the planning process into the management function.   The major task for the first year is to establsh these mechanisms and to provide an initial iteration of the long-range planning.   It is not to be expected that the first iteration will be comprehensive and completely on target.   Inevitably there will be false starts and fumblings.   In the process, however, the participants should become much more sensitive to the issues that are at stake and the many influences that impinge on them.   It is this aspect of planning that makes it sensible to talk about the goal of planning, the institution of a process rather than a plan.

Given these general considerations, this appendix will lay out a specific set of expectations and timelines for the activities of the first year and will make tentative suggestions for subsequent years.   With sufficient background preparation by planning staff, it is anticipated that a series of seven bi-monthly meetings of 3 to 4 hours duration will be required of the planning participants in order to accomplish the initiating activities to be scheduled for the first year.

General Approach.   The plan for planning assumes that PP&O will designate a planning coordinator who will be tasked to perform the necessary functions and activities.   Each lab will designate a lab coordinator to work with the PP&O coordinator.   During the first year, the coordinators will schedule the periodic meetings of the planning participants and will provide agendas and discussion materials for these meetings.   When feasible, the coordinator will provide strawman versions of the scheduled output statement(s).   Such statements and other backup documentation will be distributed in advance to planning participants to permit them to review and propose amendments to and amplifications of the strawman.

Agendas for meetings will include discussion and action on several points:

● Inputs from environmental scanning activities.

● The content of the output statement(s) that are to be the product(s) of the meeting.

● Procedures to be followed in conducting or gathering data for subsequent tasks.

● Guidance from top management on organizational and substantive issues to form the basis for upcoming preparation.

• Other items as appropriate and necessary.

Planning participants will be asked to study and analyze the background materials prior to the meeting and to be prepared to discuss and act on the necessary action items at the time of the meeting. Planning participants should be prepared to provide guidance for further activities.

THE PLANNING TASKS IN DETAIL: MEETING AGENDAS

In this section, the several meetings and their themes will be discussed. Included in the discussion of each meeting is a brief statement of the issues entailed in developing the outputs as well as a statement of the kinds of inputs and outputs that are expected. For a further statement of issues, see the original discussion of Tasks to be Accomplished by the Planning Participants in the first part of the Metaplan. Figure 1 presents a schedule of meetings.

Initial Meeting:

Orientation. Input: Various background documents on the process of planning, copies of "plans" of other agencies, PP&O Planning Documents. Issues: The agenda for the initial meeting will consider the planning process itself. The Planning Documents, including the Metaplan, will be discussed and ratified with modifications as desired. Each of the several tasks will be analyzed and a general agreement about a plan of attack and a schedule will be reached. In particular, participants will be asked to prepare to consider The Probable Future, which will be the primary subject for the third meeting.

Outputs: Ratified Metaplan; tentative schedule for participants.

Second meeting: End of 2 Months

Goals/Values, Mission Formulation. - Goals/Values. Inputs: Lists of values from previous ARI efforts and from other agencies as available; strawman list of values prepared by planning staff and PP&O. Issues: What values are to be proposed as the basis for planning for ARI?

Outputs: Ratified Values Statement.

- Mission Formulation. Input: Various mission statements of ARI and related organizations; PP&O strawman. Issues: What will be the "people-related problems" of the Army during the 25-year planning period? What problems are likely to be prominent at the end of the planning period? What procedures and techniques will be available to deal with people characteristics? How should ARI structure its approach to providing the Army with support with respect to these issues?

Output: A ratified mission statement with explanation and explication.

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ACTIVITY//                                          MONTH
                              1    2    3    4    5    6    7    8    9   10   11   12
Orientation
Scan             =======I=======I=======I=======I=======I=======I=======I
Goals            =======I
Mission          =======I
Contingencies    ===============I
Future Model            ===============I
Assess Status           =======================I
Identify Gaps                   =======================I
Integrate Plans                         =======================I
Implement        =======I=======I=======I=======I=======I=======I=======I
Iterate          ------------------------------------------------->>>


        ===== - Activity ongoing                 I - Subject of meeting
```

Figure 1.   Schedule of activities and meetings.

Third Meeting: End of 4 Months

Probable Futures/Contingencies. Input: Various future-oriented documents with summaries prepared by planning staff; analyses prepared Army--e.g., ARMY 21, etc.; PP&O strawman. Issues: What kind of world will the world of 20 to 25 years hence be, given possible developments in the areas of social, economic, political, military, technical, and behavioral science? What are major factors likely to impact on the mission of ARI? What are some possible alternatives to these? Does the Future Model seem feasible in light of probable futures? Given a reality orientation does the Future Model need revision? What possible alternative future scenarios would call for major changes in the Future Model? How likely are they, and what effect would they have on the Future Model?

> Output: Statement detailing the assumptions about the future that will govern the planning process, together with alternatives weighted with respect to likelihood.

Fourth Meeting: End of 6 Months

Modeling the Future Organization. Input: Existing analyses of needs; PP&O strawman. Issues: <u>Primary Organization</u>. What would the ideal organization that could most effectively carry out the future mission formulated above be like? What dimensions do we wish to consider in this analysis? How do the values from the Statement of Values get built into the future organization? <u>Primary Substantive</u>. What basic science and technology knowledge will be required for future activities of the Institute? What are likely developments in the behavioral science data base? Where is the field going? Where do we want it to go? <u>Secondary</u>. What documentation is available for the next stage --Current Status Analysis? What dimensions of current activity are germane to the Analysis?

> Output: Statement detailing parameters of the future organization. Statement requesting documentation needed for Current Status Analysis.

Fifth Meeting: End of 8 Months

Current Status Analysis. Input: Various documents requested above including summaries of space, personnel, funding, productivity, and activities. Analyses of needs in these areas when available. Issues: Given the general dimensions and parameters of the Model of the Future Organization, where do we now stand?

> Output: Statement summarizing Current Status.

Sixth Meeting: End of 10 Months

Gap Analysis. Input: Prior planning statements; PP&O strawman. Issues: What are the discrepancies between the Future Model and the Current Status? What strategies are suggested for bridging gaps? What specific objective goals can be identfied? What specific subgoals are to be proposed, and what are the timelines for these? Do contingency plans call for a change in strategy and objectives? If so, under what conditions would they be adopted?

Outputs: Statement describing planning objectives, specific goals and subgoals with mileposts, and contingency plans.

Seventh Meeting: End of 12 Months

Integrating Functional Plans. Input: Futures papers related to the behavioral science disciplines; statements of Army people-related problem areas; S&T Plans; PP&O strawman. Issues: What future substantive, technical developments in the behavioral sciences and what future Army problems should shape the research program of the Institute? How should the Institute contribute to the development of the science base? How and when should specific substantive R&D activities be instituted? Are current POM-oriented planning activities consistent with the general approach being developed? What organizational changes should be incorporated into the budgeting process in order to support contemplated activities? What general procedures or mechanisms should be adopted to support this integrating function in future years?

Outputs: Statement providing general description of contemplated substantive developments and Army problems to be addressed to provide guidance for basic research and other R&D activities. Statement describing procedures for incorporating this function into the annual budget-generating mechanism.

All Meetings

Implementation. Input: Strawman. Issues: What additional steps or programs are required in order to satisfy the full set of implications of the plan objectives? What additional ARI Regulations and other implementing actions are required to set the total planning package into place? How are these to be funded?

Outputs: Specific regulations implementing other actions; guidance for the development of other programs.

Subsequent Activities

In most years, it is contemplated that perhaps two semiannual meetings of the planning participants would suffice for a formal consideration of future-scanning inputs and a review of planning activities. At one of these yearly meetings, consideration should be given to the whole array of planning tasks and their outputs to ascertain whether or not they require revision and/or updating. Occasionally, however, major events may have such a real or potential impact on the future status of the organization that a more comprehensive effort may be required to revise and update planning statements. A staff person in PP&O should be tasked to provide perhaps .25 time to planning and future scanning activities and should be provided with a small budget for materials, consultants, and travel.

APPENDIX B: SAMPLE OUTPUTS OF THE PLANNING PROCESS

This appendix contains several examples of output documents or statements
that might emerge from the planning process. The samples include a summary
statement, a goals statement, a mission statement, and two "probable future"
scenarios. These are intended only as examples, and there is no intention to
make them complete and comprehensive or even realistic. The actual process
will entail the solicitation of reasoned inputs from senior management, and
no attempt has been made at this stage to involve them.

Figure 2 represents the kind of overall statement that the Institute might
wish to create for external consumption. Again this consists of an arbitrary
set of statements covering the same kind of issues that the planning partici-
pants could present to a larger audience.

Table 1 contains a set of goal and value statements that are intended to
be examples of the kinds of statements that the planning participants might
develop as a guide for planning a model future organization. Also included
are statements that deal with the organizational and substantive implications
of the values and goals statements.

Table 2 presents a sample mission statement that might be developed for
the future ARI, along with substantive and organizational implications of the
mission.

SCENARIOS

The planning process is intended to generate alternative future scenarios
to provide the context for planning. Planning is seen as a mechanism for capi-
talizing on opportunities provided, for avoiding pitfalls, and, in general,
making the most of likely events in keeping with the goals and values of the
organization. Planning should focus on the most likely of the alternative
scenarios, but contingencies should have been considered for other possible
contenders. As a result of this process, there is likely to be a thought-
through plan of action applicable to most of the surprises that accompany the
actual future as it unfolds.

In this section two sample scenarios will be considered in a very abbre-
viated form. These two have been selected because they are extreme and, there-
fore, unlikely. These scenarios do, however, provide us with an opportunity
to observe the way in which planning decisions depend on the particulars of
the scenario, and that is the purpose of this sample.

Scenario I: A Glut of Peace. In this scenario, it is assumed that the
Russian peace overtures are genuine. The Russians move their troops out of
Eastern Europe and pack up their missiles after lengthy negotiations that re-
sult in our moving our troops out of Europe and shutting down our missile
capability. Simultaneously we agree with Russia to monitor and maintain the
status quo in the Mideast. There emerges a need for a very limited military
capability. This is satisfied by a merger of the Army, Navy, and Air Force
into a single force that performs an integrated function. DOD becomes the
Department of Military Affairs. ARI takes the lead in the development of a
consolidated human research function. Concomitantly, domestic economic and

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A VISION OF THE ARMY RESEARCH INSTITUTE OF THE FUTURE

GOALS

- Provide human technologies to maximize Army effectiveness
- Be a recognized international leader in behavioral science research and development

PRIMARY MISSIONS

- Identify and prioritize Army people-related problems and issues
- Focus research and development programs on problems
- Facilitate implementation of research solutions
- Evaluate and improve research products
- Develop the requisite behavioral science data base

APPROACH

- Emphasize familiarity with Army organization and operations
- Focus on future problems and requirements through planning
- Focus resources and capabilities in emerging and critical areas
- Leverage academic and industrial research and development
- Emphasize hands-on research and development
- Build from a broad disciplinary knowledge base

TARGET ORGANIZATION

- High-quality, productive work force supported by career development activities
- State-of-the-art equipment and facilities
- Collocation with research university

KEY TECHNOLOGIES

- Enhancing human cognitive processes ● Refined task analytic procedures ● Linking basic psychological research to human action and performance ● Prescriptive techniques for influencing human action and performance ● Small-group development ● Social bonding procedures ● Component skill development ● Techniques for supplementing human capabilities with aiding devices ● Refined techniques for assessing personality/capabilities ● Techniques for establishing and measuring performance criteria ● Methods for improved modeling of human performance in systems design

Figure 2. Sample summary statement for external distribution.

Table 1

Sample Statement of Values and Goals to Guide ARI Planning

- ARI should be the most effective instrument for human-related military-oriented research that its management can devise. Management must decide how ARI can be most effective: the activities undertaken, the processes utilized, and the Army goals that can best be met with behavioral sciences methods.

- Army (military) needs must drive ARI activities. ARI management should establish priorities for ARI that are guided by Army priorities.

- ARI should have a corporate capability that provides an intimate understanding of Army (military) operations and functions at all levels of the Army, present and future.

- ARI should have a firm commitment to the development of military behavioral science as a substantive discipline and a recognized professional specialty.

- ARI should stand as a model research endeavor. It should have an internationally recognized reputation in applied science, and its substantial scientific output should be of the highest quality.

- ARI should provide a program and resources that encourage and facilitate the development and retention of top-notch applied-scientific and management talent.

- The ARI program is committed to the development of its own management capability and of recruitment of management from within.

- ARI stands for professionalism of the highest order.

- ARI stands as a resource of knowledge of behavioral science issues and is prepared to engage in a variety of activities, not limited to laboratory or field research, to provide the Army with solutions to military problems.

- ARI recognizes that many behavioral science disciplines can contribute unique capabilities useful in the solution of Army people-related problems, and it encourages and facilitates a cross-disciplinary approach within the Institute and in its external research program.

- ARI is committed to the development and maintenance of complementary external research capabilities supported through contract funding.

Table 1 (Continued)

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- The ARI program should focus on applied problems, but development of
  the necessary basic science base must be a high priority.

Substantive Implications of Values/Goals Statement

A commitment to a broad knowledge base implies that a variety of social
science disciplines are seen to be implicated in the mission of the Institute.
This recognition carries with it the necessity of identifying and developing
relevant portions of disciplines other than psychology.

Organizational Implications of Values Statement

Having active researchers with facilities to support them argues for
collocation of the Institute with a research university engaged in comple-
mentary research activities. Knowledge of Army operations and development
of management capability from within argues strongly for a major human re-
sources development program that focuses on providing continuing exposure
to military operations and support activities. Military_personnel assigned
to ARI should play a major role in such a program. ARI will work toward the
development of a major field unit activity that will provide immediate and
extended access to personnel for research purposes. Concern for a broader
social science base argues for an organization with a variety of specialties
represented on the staff.

Table 2

Sample Statement of ARI Mission

The Army Research Institute enhances the effectiveness of the Army through the application of behavioral science knowledge and techniques to problems and issues related to the utilization of people in military systems. In support of its mission, the Institute analyzes and evaluates human and organizational performance and develops cost-beneficial procedures designed to improve performance. The Institute engages in and supports research and development activities designed to improve or to fill gaps in knowledge requisite to the enhancement of military effectiveness, and it undertakes research and development activities related to necessary products. If consolidation of the military personnel research function should occur at the DOD level, this mission statement expands to include all branches and arms of DOD.

Substantive Implication of Mission Statement

Broadening of the discipline base to encompass a broader range of behavioral science issues seems called for.

Organizational Implications of Mission Statement

The prospect of unification of DOD personnel research functions probably means maintenance of specialty research capabilities focusing on the peculiar problems associated with land, sea, and air warfare. These problems should be represented somewhere within the structure.

Each laboratory, field unit, and technical area will develop its own mission statement. The sum of these mission statements should come close to approximating the overall ARI statement.

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social developments bring about the initiation of a universal 2-year service program making use of old Army facilities in part, and the remainder of the Army, under the title U.S. Service Corps, is tasked to form the cadre to staff and operate the service program. The Service Corps is intended partly to provide job experience for a large group of youths who cannot find work in a depressed economy and partly to inculcate traditional American values. ARI is tasked to provide a rationale and implementation procedures. This task is tantamount to personnel planning for the private sector. The time frame for these developments is from the present to the year 2010.

- Implications: Clearly, much of the existing research program would no longer be relevant to the emerging service mission. There are, however, some specific problem areas for which a research approach seems appropriate. The ARI planning process recognizes many of these in advance and initiates research programs in the following areas: orientation of officers to civilian occupations and values; analysis of civilian occupations and skills; inculcating social values; analysis of social support structures in various social groups; economic modeling of entry level in the civilian sector. Organizationally, ARI had anticipated the consolidation of the human research function in DOD and had taken steps to organize a planning effort to facilitate the process. For this effort, ARI was selected as the lead agency and retained much of its corporate identity as the operations of the other services were folded in.

Scenario Two: "Fortress America." In this scenario, it develops that the Russian peace initiative under Gorbachev is a sham, but a very successful one. Russia succeeds in moving us out of Europe and assumes hegemony over Western Europe. Taking advantage of economic conditions in South America and Canada, Russia also succeeds in subverting these nations, and they become pawns of the Russian Bear. Moving in for the kill, Russian troops are stationed along our northern border and along the southern border of Mexico, which has been annexed by the United States at its request. As a consequence, the country is mobilized for war. Universal military training comes into existence, and a large standing Army is maintained. The Army takes control of defense-oriented corporations. This activity is based on a policy that stresses readiness as a means of deterring Russian aggression. The mission of ARI is to enhance that readiness. The U.S. seeks to overcome the large manpower superiority of the Soviets by creating a robotic fighting force-- remotely controlled planes, tanks, and even infantry soldier surrogates. These are loaded with sensors, heavily armed with multiple weapons, and teams are used to control each. The Air Force develops a "Dragonfly" technology that enables planes to skitter randomly around a fixed path to avoid enemy procedures to intercept and destroy them.

- Implications: The problems faced in human research in this scenario are maintaining readiness, productivity, and morale in a constant threat environment; dealing with a mobilized population under a martial-law situation; and optimizing control processes for remote control by teams of weapon systems that bring with them a large amount of information from their sensors. ARI's research program becomes focused on these issues.

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