# TEAMWORK IN TASK ANALYSIS

## Training Manual V

Arthur H. Kuriloff and Dale Yoder

Technical Report No. 9

EVALUATION OF THE MARINE CORPS
TASK ANALYSIS PROGRAM

California State University, Los Angeles

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Each project in the Marine Corps Task Analysis program is assigned to staff
members, organized to form a work-team. Their continuing performance, as
an effective team, is crucial for success of the project. This Training
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work teams, with explanation of such specific techniques as goal-setting, action-planning, the organization mirror, force analysis, and business games. Chapter I also outlines methods and techniques for achieving organizational change and improvement, with special attention to conflict resolution, role reversal, and team development. Chapter 2 of the Manual explains "management by objectives" as an integrated system for planning and achieving effectiveness in teamwork. Chapter 3 discusses how use of the matrix organization may offer advantages as an alternative to the traditional organizational pyramid. Included is an annotated bibliography of books and other published materials dealing with organization maintenance, development, and teamwork.

SUMMARY

Each project in the Marine Corps Task Analysis program is assigned to staff members, organized to form a work-team. Their continuing performance, as an effective team, is crucial for the success of the project. This Training Manual provides guidelines for effective teamwork and work-team maintenance and development. Chapter 1, the major portion of the Manual, begins with an explanation of the major obstacles to optimal team performance and describes methods using the tool of intervention for diagnosing problems in work teams, with explanation of such specific techniques as goal-setting, action-planning, the organization mirror, force analysis, and business games. Chapter 1 also outlines methods and techniques for achieving organizational change and improvement, with special attention to conflict resolution, role reversal, and team development.

Chapter 2 of the Manual explains "management by objectives" as an integrated system for planning and achieving effectiveness in teamwork. Chapter 3 discusses how use of the matrix organization may offer advantages as an alternative to the traditional organizational pyramid. Included is an annotated bibliography of books and other published materials dealing with organization maintenance, development, and teamwork.

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CHAPTER 1

## DEVELOPING THE ORGANIZATION

### OVERCOMING OBSTACLES TO TEAMWORK

Organizations sometimes suffer from <u>win-lose power struggles</u>
between managers and groups.  Symptoms of this organizational di-
sease are seen in infighting for status, authority, control, or
recognition by superiors.  Managers seeking to win may exhibit
ruthless behavior demoralizing to the organization.  They ride
rough-shod over others in their efforts to win.

<u>When win-lose values permeate the organization, members play</u>
<u>it close to the chest</u>.  Communication between individuals and
groups loses authenticity, and innovative ideas are stillborn.
Individual managers devote much of their energy to survival in
the hidden warfare of the destructive psychological win-lose game.

Win-lose behavior stems from individual attitudes and manage-
ment climate.  Attitudes may be evidenced by the individual's or
the group's behavior.  The assumption underlying these attitudes
is that the interests of two individuals or groups are mutually
exclusive--that the only possible outcome is for one to win and
the other to lose.  As a result, defense of the ego assumes para-
mount importance.  The individual manager comes to believe that
his position, or his group's, is the only one that is right and
proper.  The accompanying intolerance is aggravated by an  in-
creasing suspicion of other managers and their groups.

The win-lose attitude reflects the fear of losing face--
defensiveness--as if the individual manager were putting his
self on the line. Acting on the basis of this perception, he
adopts a counterdefensive posture--protecting himself by show-
ing inappropriate and immoderate aggressiveness towards other
managers and groups.

Distorted perceptions are part and parcel of win-lose path-
ology. Differences between people tend to be exaggerated, agree-
ment minimized. The individual assumes more positive "ownership"
of his ideas, blocking and belittling those of his "opponent." A
kind of demonology emerges--angels versus devils, good guys ver-
sus bad guys. The possibility for cooperative problem-solving
vanishes.

The typical result of win-lose pathology is loss of organi-
zational effectiveness. Victory promotes complacency; defeat
leads to regrouping of forces and all-out warfare.

To change from a climate of win-lose to one of free and
open expression is a challenging but not impossible task. The
basic problem is that of changing personal attitudes. People do
not "have" attitudes in the same sense that they have automobiles
or typewriters. Attitudes may be described as sets of percep-
tions, or personal ways of viewing and interpreting the environ-
ment. They are deeply ingrained by years of conditioning and not
easily changed. More often than not, persuasion, logical argu-
ment, admonishment, punishment or other frontal attacks on atti-
tudes fail, for we view change-efforts of this kind as threats
to our egos--and we resist them fiercely.

If we are to succeed in changing attitudes, we must adopt

<u>different strategies</u>. We must first accept the way a man views his world. Then we must somehow help him to <u>reorganize his perceptions</u>. Our best hope lies in indirect methods that allow him to see and--of his own volition--correct any disparity from perceptions leading to interpersonal competence and to organizational health.

The rapidly emerging field of <u>organizational development</u> offers methods for effecting such change. These methods are primarily indirect and are designed to help people understand and correct discrepancies between their outlook and the healthy perceptions that underpin a climate of motivation, cooperation, and productivity. Typical methods available for effecting beneficial change include data-gathering techniques, team-building procedures, joint planning sessions, ways of arriving at consensus, the organizational mirror, and business games. These methods and techniques and others are described in the section on organizational development in the pages that follow.

ORGANIZATIONAL DEVELOPMENT - DEFINED

There are many variations of definitions of Organizational
Development.  Most have many elements in common.  The following
definition seems to fit most logically.

"Organizational development can be defined as a long-range
process, combining elements of science and art, directed toward
improving the effectiveness of organizations.  Effectiveness
implies performance showing acceptable profitability, innovative
approaches, productive efficiency, fulfillment of public respon-
sibility, concern for members as human beings, and a healthy
psychological climate supporting human growth.  Improvement in
organizational effectiveness results from increased technical
and interpersonal competence throughout the organization.

"The scope of organizational development covers the total
enterprise, from the organization in its community to the indi-
vidual as the fundamental unit of organization.

"The methodology of organizational development is based on
principles derived from research in the behavioral sciences; its
efforts center in change through planned interventions in organ-
izational processes.  The methodology focuses on human problems
and therefore provides both cognitive and experiential learning
in its change efforts."[1]

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1.  Kur\_iloff, Arthur H., ORGANIZATIONAL DEVELOPMENT FOR SURVIVAL,
New York:  A.M.A., 1972, pp. 44-45.

## PROBLEM-SOLVING IN ORGANIZATIONAL DEVELOPMENT

Following is a widely used outline of the steps taken in problem-solving in Organizational Development. Sometimes there is need to vary or change the sequence of these steps--depending on the manager's judgment of the specific situation at any given stage in the process.

- Data collection
- Diagnosis
- Stating the desired objective for beneficial change
- Designing the "intervention" (a planned procedure) to achieve the desired change
- Engaging actively in the intervention
- Measuring progress through feedback
- Timing feedback to avoid "noise"
- Recycling the procedure to keep the intervention on course

# INTERVENTIONS FOR DIAGNOSIS

## MANAGER'S DIAGNOSTIC TEAM MEETINGS

- Purpose: To make periodic assessment of the effectiveness of an organization
  - Team comprises:
    - o Top manager or a principal assistant
    - o Consultant, if used
    - o Staff assistant or assistants with company-wide responsibility, such as personnel manager or human resources manager
    - o Any personnel, on a diagonal section, who can contribute beneficially to the team (group should be kept reasonably small--7 to 12 people maximum--as a rule of thumb)
- Procedure: Data gathering by interviewing, questionnaires, or sensing
  - Personnel prepared ahead of time
  - Unstructured meeting with group
  - Tape recorded for subsequent review

GOAL-SETTING AND ACTION PLANNING MEETING

- Purpose:  To set goals and action steps for change with
  a larger group who work together.

- Steps:
  - Data gathering
  - Goal setting
  - Action planning

- Procedure:
  - Break up into "six-packs," including managers in each
    subgroup.
  - Each group makes a "grocery list" of changes that would
    benefit the organization and make it easier for them to
    do their jobs.
    o Each selects the two or three most important changes.
  - Each group feeds back to the total group its two or
    three most important changes.
  - The total group then combines, discards, and assesses to
    select the three or four changes that would produce the
    greatest benefit to the organization.
  - Work then proceeds on developing next steps and action
    plans to effect these changes.
    o Management by objectives and self-control can be used
      beneficially here.
    o Responsibilities for action by individuals are assigned.
  - Follow-up meetings are scheduled to keep the various act-
    ivities moving.

WORK GROUP DIAGNOSTIC MEETING

- Purpose: Manager and his immediate work group meet to assess their performance.
  - Manager informs his group prior to the meeting that he wants to collect information on specifics, such as:
    - o Planning
    - o Progress in achieving goals
    - o What we do best
    - o What we do worst
    - o How is our teamwork: management style; cooperation in resolving differences of opinion, helping others, not helping others?
    - o Our communications: up, down, and sideways.
- Uses:
  - To help a group decide what change steps, if any, it wants to move ahead on.
  - In advance of a team-building meeting, as a warm-up and to build an agenda.

## THE ORGANIZATIONAL MIRROR

- Purpose: To allow an organizational unit to collect data
  by feedback on how it is perceived by other
  elements to which it relates: sister units,
  peer groups, customers, suppliers, or other
  units that use their services.

- "Consultant" or objective third party interviews represent-
  atives of both groups to get the sense of the important
  perceptions of both parties.

- Consultant feeds back to both parties, in the meeting, what
  he has learned.

  - "Outsiders" (other elements of the organization) discuss
    and interpret the data in a fishbowl.

  - "Insiders" (group wanting feedback on how it's perceived)
    interpret what they heard outsiders say; identify issues
    needing clarification.

- General, open discussion to summarize what has happened so
  far (no solving of problems allowed).

- Subgroups of outsiders and insiders identify the four or
  five most important changes needed to improve the effective-
  ness of the organization.

  - Subgroups report to total group.

- Total group synthesizes lists.

- Subgroups develop plan and specific action items for making
  change.

- Task groups assigned.

Summary:   Each task group reports on plans, action steps, persons responsible, and target dates for accomplishment.

- Consultant, or head manager of inside group, summarizes day's work.
- Uses:
  - As indicated, for finding out what others perceive in behavior of initiating group.
  - Particularly useful for staff service groups:
    - When a group or organizational unit is being bypassed.
    - When a group receives undeserved criticism.

FORCE FIELD ANALYSIS

- A group in a state of <u>social stability</u> (quasi-stationary equilibrium) is in balance between the forces that exert pressures for change and forces that resist change.
  - Forces exerting pressure for change are called <u>driving</u> forces.
  - Forces resisting change are called <u>restraining</u> forces.
- At any one moment the sum of the driving forces must be equal to the sum of the restraining forces.
- To use the method for diagnosis, identify by appropriate organizational development techniques the restraining and driving forces.
  - Techniques might include:  Direct interviews with

    individuals or groups, questionnaires, sensing, <u>organiza-tional mirror</u>, or careful observation.
- Array the restraining forces in priority of intensity
  - Choose the one or two both easiest to reduce and likely to produce the most significant effect when eliminated or reduced in intensity.
    o Effect the necessary change to reduce or eliminate their impact.
- Movement will now occur toward the behavior desired.
- When the desired change has been achieved, the new behavior may be stabilized by applying appropriate techniques in the

methodology of organizational development: team building, group problem-solving, organizational mirror, planning sessions, or other specially arranged means intended to reinforce the new behavior.

Note: Force field analysis includes an element of technique for change to its diagnostic utility.
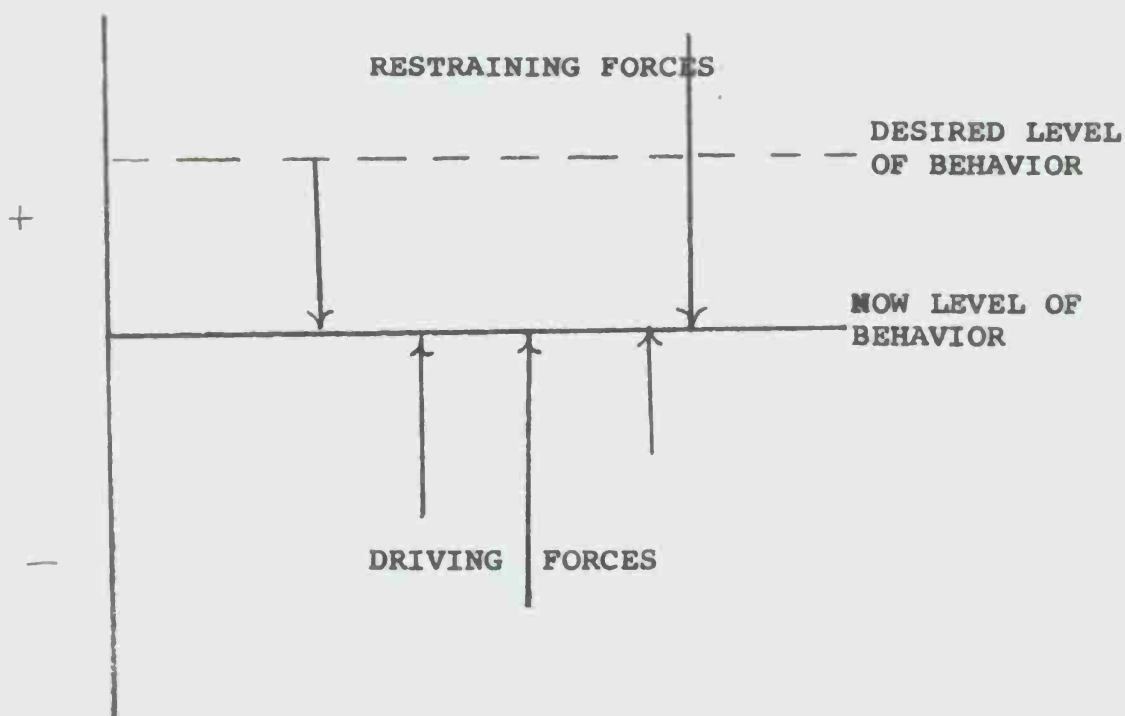


Figure 1

FORCE FIELD

INTERVENTIONS FOR CHANGE

OPERATING GROUP TEAM-BUILDING MEETING

- ● Purpose:  To build teamwork in an operating group.
  - – Who:  Manager, his group, and a consultant, if available
- ● Background:  Time can run 1 to 5 days
  - – Candid, open communication about <u>ideas</u> and <u>feelings</u>.
  - – Joint participation required in all aspects of the meeting:
    - o Early planning
    - o Meeting process
    - o Follow-up
- ● Typical steps in procedure:
  - – Set objectives for the meeting
    - o Always look at both <u>content</u> and <u>process</u>.
    - o Planning done by manager, consultant, and selected personnel
  - – Gather data for the meeting
    - o Use questionnaires, instruments such as check lists, sensing, or interviewing.
    - o Or use Family Group Diagnostic Meeting.
  - – Conducting the meeting
    - o Manager or consultant presents the data to the whole group.
    - o Group, or subgroups, prepare agenda, with items listed <u>by priority</u>.

o Group throws out the "noise" or "garbage" (personal and interpersonal issues that stand in the way of the process of problem-solving per the agenda)

o Group produces a list of action steps to be taken after the meeting, assigns responsibilities, and target dates for achievement.

- Follow-up

  o One-shot inspirational meetings don't fix things permanently.

  o Technical and interpersonal competence need continual attention and support.

  o Set up the schedule for a follow-up meeting.

  o Conduct a post-mortem on the previous meeting; ask questions like:

    . How do you feel about the meeting now?

    . Are we slipping?  How?

    . Did we make decisions that we should re-evaluate?

    . Did we skip something we should take up now?

    . Did anything come up at the meeting that you now feel uncomfortable about?

  o Report back from those responsible for action plans (doesn't have to be in a team meeting.)

  o Readjustment and re-planning to correct variances.

    . Manager can do this on a one-to-one basis, or have one of his tenacious, responsible subordinate (staff members) managers do this.

  o Team-building session (1-5 days) might follow a twice-a-year schedule.

CONFLICT RESOLUTION--MEETINGS FOR TWO

- Purpose:  To improve cooperation between two people,
  boss and subordinate, or peers.

  - Aims:

    o To improve interpersonal relations (get rid of dysfunc-
    tional influences acting between them).

    o To _identify_ what each expects of the other.

    o To _clarify_ how each individual's expectations are not
    being met.

    o To _negotiate_ changes in the expectations and how
    they're to be met.

    o To _increase_ mutual helpfulness and cooperation.

- Method:

  - Each party makes up three lists:

    o Positive feedback list:  "Things I value in the way
    we work together."

    o Bug list:  "Things you do that I can't stand, that
    bug me."

    o Empathy list:  "Things that I predict you'll say about
    our relationship and me"--positive and bug.

  - Each presents his lists in turn, orally to the other,
    monitored by consultant, or objective third party.

    o No talking or arguing, except to ask a question for
    clarification, while the other presents his lists.

  - Each may now add information that will clear up unclear
    points.

    o No talking or arguing, as before.

- The parties now negotiate around changes they would like
  to see happen.
  o They agree to planned changes; decide how to bring them
    about.
- The consultant lists the agreed upon actions--and also
  those not yet resolved.
  o The parties decide how to go about resolving these
    issues--or agree to let them be for the time being.
- The pair then plans follow-up measures to check on their
  action steps and how they are progressing toward the
  agreed upon goals.

- Uses:
  - For two people who are unhappy, frustrated, angry with
    each other, psychologically divorced.
  - For key managers whose work meshes, who must collaborate,
    and whose interpersonal transactions materially affect
    the organization.
  - For manager and subordinate who must work closely
    together.

- Notes:
  - Not for routine issues.  This method is to be used for
    major overhauls.
  - Consultant should always provide follow-up.

- Rogerian reversal of roles is useful here.[2]

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2.   This is a technique, suggested by Carl Rogers, for reducing the
tension between two people who are in conflict.  The consultant, or
other objective third party, suggests that each repeat in his own
words what the other has said, until the latter agrees that first
party has really stated his meaning accurately.  When both have
gone through this procedure to each other's satisfaction the dis-
pute usually will have lost its sting.  Resolution of the conflict
very often follows, under guidance of the third party, if necessary.

INTERGROUP TEAM-BUILDING MEETING

- Purpose: Two groups meet to improve their collaboration in work. The meeting is designed to foster mutual understanding and cooperation--and to cut down isolation and destructive competition. This technique is useful in mergers as well as in single organizations.

- Procedure: Similar to conflict resolution between two people--to bring out hidden resentment and mistrust; to separate distorted perceptions from clear perceptions; to develop explicit mutual helpfulness.

- Steps:

  - Setting objectives for the meeting.

    o Planning committee made up of managers of the two groups, consultant or other objective third party, and perhaps two or three representative of each group.

      . Committee discloses its impressions of current relationships.

      . Decides on what data are needed before groups meet, and how to gather such data.

      . Outlines procedure for the meeting and the follow-up afterwards.

      . Decides who should attend, the time, length, and place of meeting.

- Data gathered, by means previously discussed: question-
  naires, check list, interview, or others.

- Meeting held

  o Three lists prepared separately by each group:

    . Positive feedback list

    . Bug list

    . Empathy list; prediction of what other group has on
      its lists

  o Spokesman for each group presents the lists.

    . Consultant states ground rules and monitors proceedings:
      no argument, no talking, only questions requesting
      clarification permitted.

  o Total group prepares a working agenda, sets priorities.

  o Subgroups are formed to work on each item of agenda

    (membership from both groups).

    . Report back to total group stating proposed objectives
      and action plans

  o Total group formulates a list of action items that it

    commits itself to perform.

    . Action steps are assigned to individuals, dyads (two
      persons), or larger subgroups, with responsibilities,
      target dates, and follow-up procedures agreed upon.

● Uses:

  - Remedy for parochialism.

  - Problems between line and staff.

  - Headquarters and the field.

  - Supplier and customer.

  - Specialist group A and specialist group B.

  - Your tribe and mine.

● Notes:

- Time:   1/2 day to 2 days

- Group size:   4 to 40

- Restrict items to things group members can do something about.

- When used to facilitate relationships in mergers:

    o In this case the lists should be as follows:

        . What we like about the merger.

        . What we are concerned about in the merger.

        . Our predictions about what the others' lists will contain.

- Second phase should follow the Operating Group Team-Building procedure, with the total group working in concert around its new joint goals and organization.

    (Note:  Procedure is similar to conflict resolution meeting between two parties.)

    Caution:  Before the meeting starts, the top manager should state what decisions are firm and must be adhered to--and what decisions are open to problem-solving by the group.

GUIDELINES FOR CONSENSUS IN GROUP DECISION-MAKING

Group consensus may be difficult to reach.  As operationally
defined, a consensual decision is one with which all group
members can at least reasonably agree.  To achieve group con-
sensus the following list of suggestions can be used as a guide-
line:

1) Avoid arguing for your own individual prediction or
   point of view merely because it is your prediction or
   point of view.

2) Approach the task on the basis of logic rather than
   on the basis of who made the prediction.

3) Avoid changing your mind only in order to reach agree-
   ment and avoid conflict.  Also, avoid conflict reducing
   techniques such as majority vote, averaging, or trading
   in reaching a group decision.

4) Support only solutions with which you are able to agree
   completely or at least to a reasonable extent.

5) View differences of opinion as helpful rather than as
   a hindrance in reaching a group decision.

CHAPTER 2

## MANAGEMENT BY OBJECTIVES[1]

Management by Objectives offers a proved and practical
way of ensuring management control while providing an environ-
ment of individual freedom. Through its use we can re-engage
the concepts of rugged individualism within the discipline
needed to achieve organizational objectives.

Management by objectives applies to the total group of
managers in the organization. The process of management by
objectives depends on total planning within the organization.
To avoid the confusions of terminology found in the literature,
three key words may be used to describe the elements of the
planning:

- Objective. An overall position, situation, or
  condition that is to be reached. Objectives are
  inherently long-range, generally requiring from one
  to five years to attain.
- Goal. An end result, shorter in range than an
  objective, but necessary to achieve before the
  objective can be realized. It will usually be
  found that several goals must be met before an

1. This section has been adapted from Arthur H. Kuriloff,
"Updating Bureaucracy", ASTME VECTORS, Dearborn, Mich., 1968/4.

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objective can be accomplished.

- <u>Action Plan</u>. A step, task, project, program, or other activity requiring action by one or more members of the organization. Several action plans will usually be required to reach a goal.

Action plans imply activity of some kind inside or outside the organization. In the long run the success of the organization in achieving its objectives--and therefore its performance-- depends on the appropriateness of its action plans and the effectiveness with which they are carried out.

## CHARACTERISTICS OF PLANS

Objectives, goals, and action plans have several characteristics in common:

- Each should be <u>clearly defined</u> in simple language. The <u>target date</u> for the achievement of each should be stated.
- A method of <u>measuring the accomplishment</u> of each should be identified, including an appropriate frequency of measurement.
- The achievement of objectives should require extending the capabilities of the organization to some extent; similarly, the achievement of goals and action plans should challenge the individual by requiring him to stretch his capacities a reasonable amount.

- Objectives, goals, and action plans should be
  attainable; they should not be made so difficult
  as to exceed the capacities of the man or the
  organization.

- Objectives, goals, and action plans should be
  limited in number. When the number of plans in
  each category exceeds a half-dozen or so, the
  planning is probably getting too complicated for
  its intended purpose, which is to afford a guide
  to what should be done. Planning does not comprise
  step-by-step instructions.

PLANNING PROCEDURE

Planning should start at the top. The top executive
should set the objectives of the organization. He should, of
course, get all the help he can from his staff and other managers
in the organization. But it is his responsibility to design the
overall organization objectives--which he is obligated to ful-
fill--if management by objectives is to work.

Once the key objectives for the organization are set,
the top executive works with executives at the next level to
define goals under each objective. The executives are expected
to contribute heavily to the formulation of goals, for they
assume responsibility for achieving the goals so established.

The second-level executives will now work out action
plans for achieving corporate goals in consultation with their

immediate subordinates (executives or managers at the third
level), who in turn are expected to make contributions to the
plans and assume responsibility for their accomplishment.

It will be observed that there is a change of scale value
at each level. Organization goals once set by agreement be-
tween the chief executive and his next-level executives become
objectives for them. In turn, second-level goals and action
plans may become objectives and goals for third-level managers.
This will become clear from examination of the diagram in
Figure 1.

The most important element in the system of management by
objectives is the individual manager. It is he who does the
basic planning for his own activities, consults with and secures
the consent of his boss for these activities. Above all, it
is the individual who accepts personal responsibility for the
achievement of the results desired of him--and agrees to be
judged by the results he achieves. In the more advanced appli-
cations of management by objectives, the individual's gross pay
for the year is systematically influenced by the level of attain-
ment he has reached in achieving the results he himself has
planned. Equitable adjustment, of course, is made for factors
beyond his control that may have influenced his performance.
The planning process for the individual manager may be readily
understood by reference to the diagram in Figure 2.

FIGURE 1    Relationship among objectives, goals, and action plans.*



### Corporate Objectives

1. Increase sales from $60 million to $72 million, by January 1 next year.
2. Complete development of pastry bakery franchise program by March next year.
3. Install management succession program by December 20.
4. Develop total management compensation package by January 15 next year.
5. Install management by objectives in manufacturing plants by November next year.
6. Complete preliminary plans for new bakery equipment plant by September 25.

### Corporate Goals = Administrative Management Objectives

A. Develop base management salary program by July 1.
B. Develop profit participation program by September 30.
C. Develop stock option plan by November 30.
D. Develop deferred compensation plan by March 1 next year.
E. Upgrade executive insurance program by December 10.

### Administration Management Goals = Personnel Administration Objectives

1. Gather position questionnaires on all management positions by June 15.
2. Prepare position descriptions for key jobs from questionnaires by August 15.
3. Evaluate and rank key positions with selected management teams by October 15.
4. Review evaluations with president and his staff by October 20.
5. Develop salary trend line, salary midpoints, and ranges by November 15.
6. Review and secure final approval of program by December 1.

### Personnel Administration Goals

a. Identify key management positions by August 30.
b. Identify management ranking teams by September 7.
c. Evaluate and rank key management positions by October 1.
e. Review and submit rankings for top management approval by October 15.

### Personnel Administration Action Plans

1. Select, with each division head and director of organizational development, position ranking teams on a diagonal cut through each division management staff by September 5.
2. Select, with organizational development manager, corporate members of position ranking teams by September 7.

*   From:   Kuriloff, Arthur H., ORGANIZATIONAL DEVELOPMENT FOR SURVIVAL, New York:
American Management Association, 1972, p. 162.

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# THE PLANNING PROCESS IN MANAGEMENT
# BY OBJECTIVES *



**NOTES**

1. Goal, or end result desired, stated in measurable terms, becomes an input for the individual manager.

2. Manager develops action plans for achieving goals, leading to activity—and output performance.

3. Changing conditions or personal factors produce disturbing forces that cause variance from desired performance.

4. Manager measures output performance against input data from desired goal and adjusts or revises plans—including goal, or even objective, when appropriate—leading to corrective changes in activities.

5. The planning process depends on a continuing series of feedback cycles in which the manager measures his performance against his goal, revises his plans, and thereby develops more effective activity.

## FIGURE 2

* From: Kuriloff, Arthur H., "Updating Bureaucracy",
ASTME VECTORS, 1968/4, p. 25, By
permission.

The process of management by objectives, when carefully
employed, works to free the individual managers for creative,
innovative effort.  It is concerned with results--and not with
the idiosyncracies of individual style or method.  It controls
the destiny of the organization by a completely integrated
system of planning; it does not attempt to dictate how the
individual manager shall do his job.  He is free to act in
accordance with his desires, proclivities, and talents within
a framework of legitimacy defined by the planning process.

CHAPTER 3

## MATRIX ORGANIZATION

Beyond the adoption of management by objectives, there is
growing need for a special structure for the technical end of
the organization.  The need of a replacement for the usual
organizational pyramid seems clear in view of the increasing
complexity of research and development.  The design and devel-
opment of advanced products requires more subtle and sophisti-
cated scientific insights than in the past.  Inevitably, these
developments result from the cooperative efforts of men with
diverse technical backgrounds.  Often they do not speak the
same language.  To the mechanical engineer, bit means something
quite different than to the communications expert.  (If this
seems simplistic, try having a statistician explain chi squared
to a pneumatic circuit designer.)

The manager of a technical group in which disparate intel-
lectual disciplines are combined must be able to act not only
as a simultaneous translator between men, but also as a linking-
pin in an organization.  Given these highly developed abilities
in the manager, what can be done about the structure of the
technical organization itself?

The technical development task demands high flexibility
in the group, with specialists moving in and out as the job
requires.  Without such flexibility we would expect to see
declining effectiveness as members become trapped in increasingly

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routine chores within a rigid structure. The buoyancy and initiative in the group would diminish as stultification and frustration set in.

The matrix form of organization offers a solution to this problem. The specialists in this organizational design report administratively to a chief specialist who is responsible for their salaries and advancement in grade. Project managers with the special abilities previously described would be part of, and report into, the conventional structure of the organization. The project managers and technical managers work cooperatively to form, re-form, and adjust membership in project groups as the task requires. The scheme is shown diagramatically in Figure 3.

The project manager and the technical manager would work with the group, setting objectives, goals, and action plans-- managing by objectives. In this way it is possible to adapt conventional organizations to the demands of technology for increased flexibility. Both administrative and functional management could be accomplished by placing competent managers in linking-pin positions at the interfaces of the matrixes with usual pyramidal structures.

As a concluding proposal, a matrix form might well serve other purposes in the organization. It would be necessary to think through the administrative and functional needs from chief executive to first-line supervisor. The pyramid of organization could then be modified where appropriate to improve organizational effectiveness and adapt it to the changing

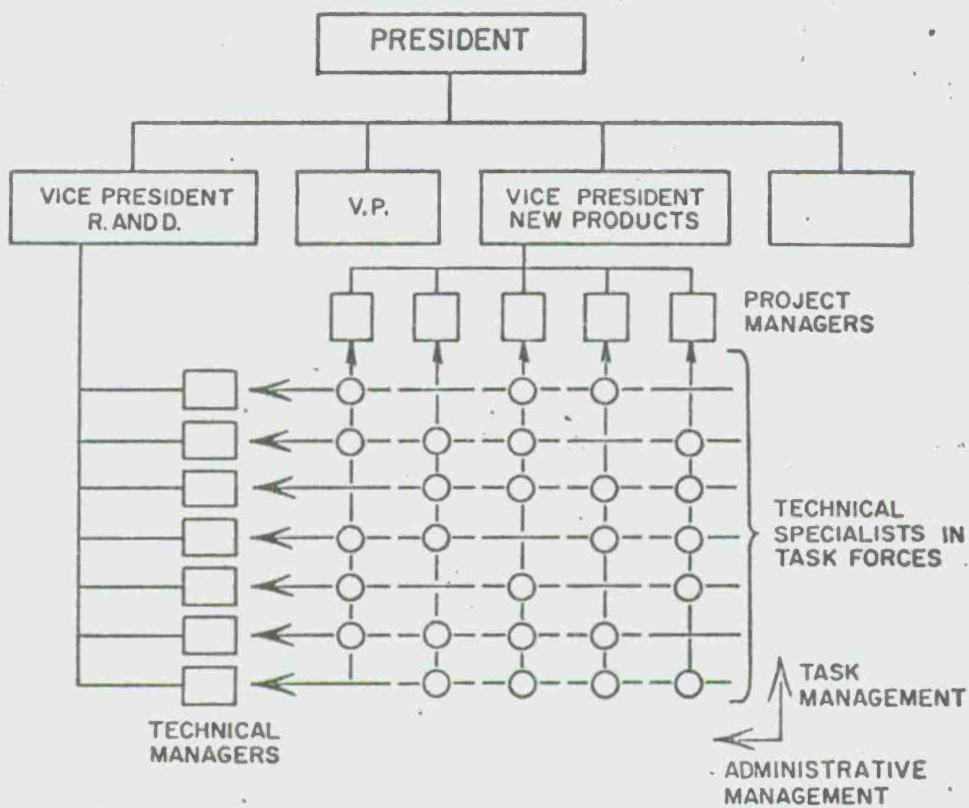## MATRIX ORGANIZATION FOR RESEARCH AND DEVELOPMENT*



FIGURE 3

* From: Kuriloff, Arthur H., "Updating Bureaucracy",
  ASTME VECTORS, 1968/4, p. 26. By permission.

new world.  Top management could in this way control the destiny
of the organization while encouraging its members to achieve
individual freedom within the organization.

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Kuriloff, Arthur H., ORGANIZATIONAL DEVELOPMENT FOR SURVIVAL, New York: American Management Association, 1972.

This is a basic book that gives the background of organizational development, outlines the methods and techniques for effecting beneficial change in organizations, and presents applications from on-the-job managerial and consulting experience. Two chapters in the book are devoted to management by objectives and self-control, which the author considers integral to organizational development.

Margulies, Newton, and Raia, Anthony P., ORGANIZATIONAL DEVELOPMENT: VALUES, PROCESS, AND TECHNOLOGY, New York: McGraw-Hill Book Co., 1972.

This text gives broad coverage to organizational development. It is basically a book of readings, with introductory comments by the authors. It is especially suitable for those who wish to become thoroughly familiar with the origins, background, and theoretical considerations from which organizational development emerged.

BUSINESS GAMES.

Many business games that offer useful training experiences in team problem-solving are commercially available. Typical are THE DESERT SURVIVAL SITUATION, THE SUB-ARTIC SURVIVAL SITUATION, and THE PROJECT PLANNING PROBLEM published by Experiential Learning Methods, Plymouth, Michigan. Many others will be found in A HANDBOOK OF STRUCTURED EXPERIENCES FOR HUMAN RELATIONS TRAINING, published by University Associates Press, San Diego, California. These games bring out the advantages of consensual problem-solving in many situations where the circumstances are not clearly defined and there are no individual experts to guide the solution. Individuals involved in these games usually find them absorbing--and learn a great deal about the need for teamwork in solving unstructured problems.

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for organizational development (OD). Selected readings
are used to cover many of the vital areas of both MBO
and OD. They are well selected and include the words
of many well-known writers in the field. Overall, the
book provides the practicing manager with a broader
view of the dynamic environment of his organization
and the factors involved in implementing an MBO system.

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reports on the existing research findings relative to
MBO and develops some practical guidelines for designing
and implementing an MBO program. The authors conclude
that this approach can improve organizational planning
and managerial performance and attitudes. They caution,
however, that MBO will fail or not live up to expectations
if it is not given adequate support and is not well inte-
grated into the organization. Numerous suggestions and
operating guides are provided throughout the book. These
generally focus on the implementation of MBO, on goal
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grating MBO with other systems.

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& Brothers, 1954, ch. 11.

    In this chapter, called "Management by Objectives and Self-
Control," Drucker laid down the basic concepts of manage-
ment by objectives for the first time. The rationale of
this managerial methodology is clearly explained. Anyone
interested in management by objectives would do well to
read this chapter as a first step.

Drucker, Peter F., MANAGING FOR RESULTS, New York: Harper &
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concepts of management by objectives several steps
farther than in his THE PRACTICE OF MANAGEMENT, although
he doesn't use the term, "management by objectives." The
book presents many specific suggestions for improving the
planning process and decision-making in management.

Mali, Paul, MANAGING BY OBJECTIVES: AN OPERATING GUIDE TO
FASTER AND MORE PROFITABLE RESULTS, Wiley, 1972.

The total mission of an organization, according to this
author, is accomplished by breaking it up into several
phases, developing operating plans for each phase, and
setting a time scale for the completion of each phase.
MBO is described as a five-phase process: (1) finding
the objective; (2) setting the objective; (3) validating
the objective; (4) implementing the objective; and (5)
controlling and reporting status of the objective. A
number of unique concepts, guidelines, and illustrations
designed to facilitate each phase in the process are pro-
vided throughout the book.

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This is an elementary book on managing by objectives and
results, labelled MOR by the author. This approach, in
essence, breaks down the managerial job into its basic
functions, selects those that are most important to the
individual manager, and then lays them out in an orderly
and logical sequence of activities. Particular attention
is paid to costs associated with a given effort. Al-
though the MOR process is described around the five basic
management functions, the focus is on planning and con-
trolling. Special emphasis is placed on defining roles
and missions, forecasting, programming, scheduling, and
budgeting as integral elements in the process. The
author provides numerous illustrations and "how-to-do-it"
examples throughout the text.

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This is an introduction to the philosophy, method, and
process of managing by objectives. The general approach
is to treat MBO as a system. In addition to providing
a description of the process and some guidelines for
setting individual and organizational goals, the author
devotes several chapters to key questions and areas.
These include the level and extent of subordinate par-
ticipation in goal-setting, the relationship of MBO to
salary administration, and the problem of the annual
performance review. He also provides some guidelines
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    This is essentially an expansion of the author's earlier
book on MBO. The description is generally around setting
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problems, searching for optimal solutions, taking action,
and controlling the effects of decisions. The author
also deals with some of the other aspects of managerial
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areas" and team implementation in MBO. Effectiveness areas,
as defined by the author, reflect the "general output re-
quirements of a managerial position." This is somewhat
different from the notion of "key result areas," which
stresses greater selectivity of job outputs. The author
also believes that many firms try to achieve too much
too soon and, as a result, tend to freeze the organiza-
tion so that it is less able to cope with the changes
required to implement MBO. "Unfreezing" is accomplished
by a series of management team meetings (starting at the
top) designed to ensure that managers understand the
nature of MBO, and are capable of identifying effective-
ness areas and of setting improvement objectives.

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