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STRATEGIES FOR CONDUCTING MISSION ORIENTED RESEARCH IN MILITARY--ETC(U)
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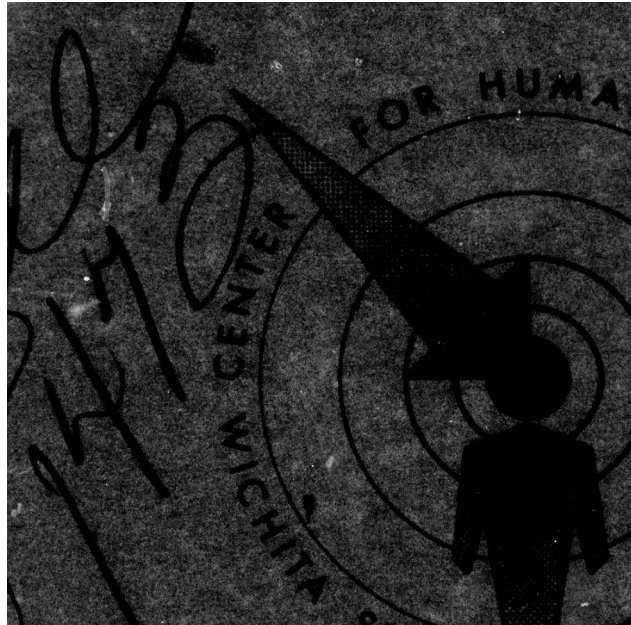
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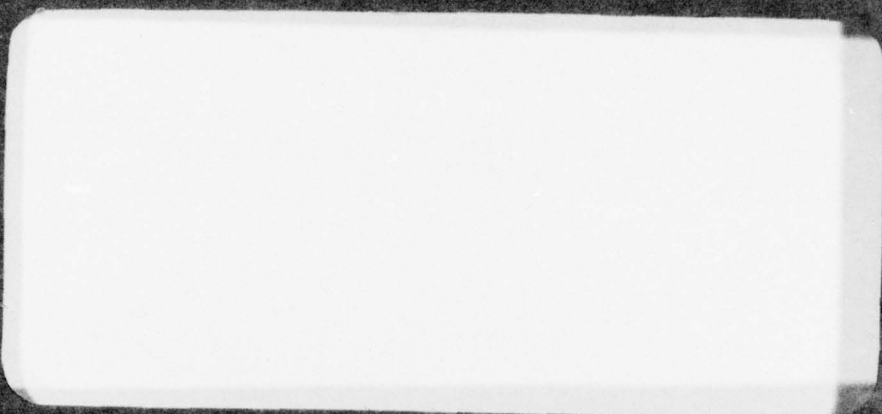
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TECHNICAL REPORT NUMBER 106

STRATEGIES FOR CONDUCTING MISSION ORIENTED RESEARCH IN MILITARY ORGANIZATIONS

By

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April, 1972

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ABSTRACT

The author outlines some of the dimensions to be considered in developing research strategies for investigations in applied settings. The "Applied vs Pure" research is differentiated into a number of other more relevant continua. "Method Centered vs Mission Centered" research defines whether it is based upon the known or upon the unknown. "Model Testing vs Sample Description" emphasizes whether descriptive or inferential results are sought. The "Program vs the Study" points out the fallacy of isolated investigation where a context has not been developed. "Treatment vs Investigatory Research" provides the dilemma of contamination of data by the method itself and whether it is the intention of applied research to leave the sample unchanged. "Prescriptive vs Descriptive Research" defines the problems which most scientists have in defining their research results into the form of actionable alternatives for remedial change.

The author explains how all of these strategy considerations have effected the conduct of research under this contract.

Those who have taken upon them to lay down the law of nature as a thing already searched out and understood whether they have spoken in simple assurance or professional affectation, have therein done philosophy and the sciences great injury. For as they have been successful in inducing belief, so they have done more harm by spoiling and putting an end to other men's efforts than good by their own. Those on the other hand who have taken a contrary course, and asserted that absolutely nothing can be known -- have certainly advanced reasons for it that are not to be despised but yet they have neither started from true principles nor rested in the just conclusion, zeal, and affection having carried them much too far. The more ancient of the Greeks (whose writings are lost) took up with better judgment a position between these two extremes, between the presumption of pronouncing on everything, and the despair of comprehending anything.---

Now my method, though hard to practice, is easy to explain; and it is this. I propose to establish progressive stages of certainty. The evidence of the sense, helped and guarded by a certain process of correction, I retain. But the mental operation which follows the act of sense I for the most part reject; and instead of it, I open and lay out a new and certain path for the mind to proceed in, starting directly from the simple sensuous perception. --- (The) art of logic coming (as I said) too late to the rescue, and no way able to set matters right again, has had the effect of fixing errors rather than disclosing truth.

- Francis Bacon
Novum Organum
1620

STRATEGIES FOR CONDUCTING MISSION ORIENTED RESEARCH
IN MILITARY ORGANIZATIONS

by Arthur B. Sweney, Ph. D., Director
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Since the enactment of the 1970 senate bill and the rider commonly referred to as the "Mansfield Amendment", research in the Armed Forces of the United States has taken on new dimensions which need not be categorized as bad. "Unit-connected, mission-oriented, and command-approved research" provides a challenge to the conscientious investigator which can not be hidden behind scientific jargon or idiosyncratic research interests. It must be concluded and emphasized that all research cannot, and should not fall within these constraints, but there are *never-the-less* no indications yet that strictures need render a research conducted in the military either weak or meaningless.

Applied vs Pure Research:

In the field of psychology and many other sciences, there has been a tendency to dichotomize research efforts into the classes of "pure" and "applied". This distinction is viewed by the author to be both spurious and detrimental to the development of meaningful and actionable inquiries. This taxonomy is probably a residual of earlier concepts and philosophies concerning the research process. Just as the scholasticists of the middle ages established systems of thought which precluded direct

observation; there is a tendency in this era to give respectability to laboratory exercises and to cast doubt upon the efficacy of the naturalistic observations. "Pure science" has often become identified with the controlled observations of trivial laboratory induced variations. By extracting the essence of life, which is complexity from human behavior, it is possible to obtain simple enough sequences to manipulate and measure and these frequently are the only studies able to qualify as "pure science".

"Applied science" on the other hand has too frequently been identified with ungeneralizable measurement. The studies of unique samples measured under unique conditions have provided science with a plethora of fact but a dearth of theory. "Applied science" has tended to engage the dragon of unknown with a frontal assault rather than nibbling at this tail in the "pure science" tradition. Armed with the shield of good intentions and almost absolute ignorance, the "applied researcher" has often sacrificed himself and perpetuated the mythology concerning the invincibility of human behavior when faced with naturalistic research methodology.

The laboratory scientist has often found the dragon to have regenerative tails, a situation which has seemed to keep the scientist forever at the same distance from the vital centers which would provide clues to the integrative processes which he seeks. Thus, both methods of inquiry have provided limited results but for different reasons. Applied research has tended to try too much with too few weapons. Pure research has tended to try too little and to squander the armory which it actually possesses.

The differences in approaches which have been ascribed to the differentiation between "applied" and "pure" research may in many instances be not only trivial but also misdesignated. The distinction between "pure" and "applied"

research probably accentuates the dysfunctional properties of each system of inquiry. The remote and trivial nature of pure research certainly can be modified. The global and non-theoretical qualities of applied research are not requirements either. There is no reason to suspect that "good" research under either of these classifications is not very much the same, and that distinctions have largely arisen as a form of self justification of the minimal kinds of results provided by either group.

Method Centered vs Mission Centered Research:

The layman and even some scientists have some romanticized concepts concerning the dynamism underlying scientific developments. Concepts such as "discovery" and "invention" have acquired mystical colorations which isolate them from the sequences and processes which constitute the fabric of science. By most people, science is perceived as being a grand mobilization of efforts against problems and challenges, thus engaging the dragon head first. More frequently, however, science has not been "mission-oriented" but "method centered" and has ignored the problems of non-understanding and have become method centered with one experiment following another in orderly fashion around a core of methodology with each experiment giving greater clarity to those that have preceded.

Method-centered research has received much of its impetus from the development of instruments and research technologies. The microscope, telescope, mass spectrograph, vacuum tube, transistor, accelerator, wind tunnel, analytic balance galvanometer, qualitative analysis, artificial bacterial cultures, material testing machines, oscilloscopes are just a few examples of instruments in the physical sciences which have generated method-centered research.

Other tools which have implemented growth in the physical science can be more clearly classified as methodologies. Manipulations, variable controls, random sampling, and progressive differentiation as in qualitative analysis would qualify as methodologies which are not instrument specific.

In the social sciences there seems to be a dirth of instrumentation. In psychology, for example, instrumentation has been minimal but the exploitation of it has been excessive. The "brass instruments" of the psychophysicist has been replaced by mazes, polygraphs, Skinner Boxes, psychological questionnaires, and inventories, projective tests, performance intelligence scales, percpetual measurements, brain stimulation, drug injection, factor analysis, analysis of variance and a finite number of other instrumentologies. Each of these has generated a body of research knowledge having a *great deal of interest* to the limited group *familiar* but providing low communication value to individuals utilizing other instruments.

In most cases the properties of the instrument and the *research* organisms have prescribed the nature of the problems to be studies. If planeria or cockroaches are run in T-mazes the universe of problems possible is fairly limited. If the human being is being studied with paper and pencil instruments and multivariate techniques, the universe of problems attacked may be very large. In each case, *however*, the methodology and instrumentation becomes the focus and not the "problems" or "missions". Factor anaylsts study everything from census tract data to the operation of the stock market from the firm point of view derived from understanding their instruments. The experimental psychologist systematically attacks an every widening perimeter of problems based upon the technologies afforded by the Skinner Box or the polygraph. In most cases *however* the methodology dictates the problems rather than the mission being implemented by *varying* methodologies.

The mission or the problem is frequently the focus of applied research. Headlong assault is made upon the unknown with the *recognized ignorance* as the tool. Tyckociner (1950) in his study of Zetetics (*the science of research*) points out that areas of scientific inquiry can be computer generated from known technology and existing instruments, but are hard to organize and difficult to predict when launched with a mission-orientation. Most funding agencies and the general population seem to accept an agenda that recognizes "mission-oriented" research as having top priority.

Examples of successful mission-oriented research are few but never-the-less noteworthy. The Oak Ridge Project, The Rand Corporation, the efforts of the Salk and Sabin vaccines are historic examples. Whether the problems of pollution or of military personnel retention will generate meaningful mission-oriented research remains to be seen. Its success may depend upon the degree to which method-oriented research has already developed a technology and scientific base which can be integrated and successfully applied.

The mobilization of scientific expertise to solve specific mission-oriented problems tend to break down parochialism and the walls between disciplines and schools of thought. Trying to find or contrive a methodology to answer a problem is so different from the normal plodding cadence of techniques oriented-research that the break in step can inject a vigor which will, many cases, resist decay. Whether its military weaponry or the development of cheap food focusing upon a mission can provide a meaningful purpose for the interaction of traditionally non-interacting scientists.

Frequently inefficiency characterizes method-oriented research. Like the drunk looking for his keys under the street light, the *method-orientation researcher* finds his job easy but the pay-off meager. The *mission-oriented*

researcher starts in the dark and works his way toward the light. Efficiency when measured by benefits over costs may appear low but even so, may be higher than in mission-oriented research.

There is no single formula which makes one research orientation clearly superior to another. The pressure of fulfilling a mission can be the impetus behind development of new instrumentation and technologies which provide the basis for various lines of method-orientation inquiries to follow in their leisurely way over the following decades. A problem or mission oriented research problem may fail completely if the method-oriented research hasn't reached the proper stage to provide the technologies that offer promise for re-application.

Testing Model vs Describing Samples:

One of the primary questions which lies behind the development of a research strategy is the question of purpose and focus. Is the purpose to expand the theoretical foundation for viewing behavior, human or otherwise? Or is the focus the description and analysis of a specific organization, individual or sample? This differentiation of emphasis is part of the hidden agenda contributed by the investigator. Scientists most frequently are testing implicit models or hypotheses. Statisticians, technocrats, and publication hungry academicians are usually satisfied to describe samples.

Although this distinction is easy to outline abstractly, it is much less easy to distinguish in actuality. Principles are often developed from an exhaustive effort to 'understand' or explain a single organism. The concept of friction may very well have evolved from the study of the behavior of a single block of wood on an inclined plane. This was theoretical, not descriptive

since the data was eventually translated into the theoretical and generalizable properties exhibited.

The activities of each of these areas may be identical but the manner of analysis and the kinds of inference drawn may differ greatly. The descriptive study is finished at the time that the data have been collected and the properly reduced to descriptive qualities. Since the purpose is to describe the characteristics of organisms rather than the principles underlying the organization of characteristics-the results become a catalogue. The organism becomes the core for numerous statistical appendages which do more to conceal than to expose the dynamic nature of the organism itself. The superstructure of facts conceals the actual nature of the organism studied.

The scientist is interested in testing models which have a high degree of generalization. He does not traditionally ask "What does this sample look like" or "How will this organism respond to this instrument"? To him the organism plays a minor role in his quest for organizing principles which have a high degree of generality. The descriptions of a sample or individual are the means and not the end for his investigation. By interrelating characteristics he is able to test models; by cataloging them he is doomed to isolation. Programs, organisms, and characteristics will continue to follow unrelated courses with no opportunity for integration.

When a scientific basis for observation and measurement has already been developed it may be worthwhile to relate a specific organism to existing norms or established scales related to other landmark organisms. Under most circumstances, however, simple descriptions have little value. The dynamic relationships between variables which fit predictive models however can be

of extreme importance because these provide the basis for generalization which marks the results of one study to the expected outcomes of yet untried endeavors.

If the behavioral sciences are to advance new models, new principles must be developed. Finding a significant difference between the means of the samples from two different populations may have little significance in and of itself. But, when this difference conforms to the results predicted from a theoretical principle of what forces govern the variability of that particular variable then a model has been tested in addition to the description of the sample.

A good inferential study should be generalizable to the other samples and populations. Unless this is true, the research has limited utility. In many cases the explanatory principles developed to understand a dependent variable in one study also has utility for predicting the behavior of completely different variables in different kinds of samples under variable conditions. This kind of research can supply multiplier effect which is necessary if the highly complex and divergent aspects of human behavior are to be integrated economically.

The Research Study vs the Research Program:

The layman and many respectable scientists view "discovery" as being the result of a single crucial experiment or study. Because of the publication lag and the latency in reporting this often seems to be reflected by the published articles. In most cases however the single article is the culmination of a program of research in methodology, instrumentation, and foundation principles which have been integrated together through the self correcting discipline of repeated studies and replicated outcomes.

The scientific community can ill afford the Quixotic although creative thrusts of the impulsive investigator. Isolated positive or negative outcomes of a single study can furnish false leads or signal the end for what would otherwise be fruitful lines of inquiry. If the investigator is insufficiently motivated to replicate his own studies he should not be too surprised that other scientists do not show significant interest.

The great break through in the physical as well as social sciences have usually been accomplished through a single investigator's sustained interest in a well planned conscientiously executed program of research. Darwin's efforts were extended over a period of over twenty years before a significant publication was made of his results. Mendel's study of genetics was the result of a life time's efforts at selective breeding. Einstein's theory of relativity was his doctoral dissertation but the rest of his life was directed toward a research program to develop an even more simple "general law" of physics. Although he failed in his ultimate goal, his objective efforts led to simplifying principles which are of current value and offer a sound foundation for the work of others.

Research may be compared to a courting process. Many pseudo scientists hop in and out of romance with various topics and methodologies. The glamour of each "one night stand" seems to wear off in the dawn's objective light when the data is tallied and accounting must be made. Disillusioned and disappointed, a new liaison is sought for the coming night. The true scientist becomes wed to his topics and problems. Through the slow but scientific and systematic process of development, an accommodation is eventually reached. Disappointing nights provide the impetus for new strategies and techniques which will be tried on the following night. Results become

measured against realistic instead of romantic and idealistic expectations. Nature give up her favors very grudgingly and only the most patient are likely to come away from the confrontation with the successes that are possible.

Treatment Research vs Investigating Research:

Since the time of Bacon's Novuum Orgauun (1620), the scientific method has been primarily mobilized as an investigatory tool. Few of us would question the legitimacy of this as a primary focus. In the last thirty years however there has been a growing awareness that research actually changes the phenomena which it studies. Evidence of this fact has been accumulating from both the physical and social sciences. The Hawthorne studies, (Roethlisberger, 1949) were contaminated by changes in the worker's behaviors which were induced by the fact that they became aware that they were being studied. The electrical engineer has found it impossible to monitor an electrical circuit without in some small way changing the properties of that circuit no matter how loosely he couples his measurement instruments to it. In studying atomic particles, the physicist Heisenberg (1955) formulated his "Indeterminacy Principle". In this he indicates that a relationship exists between the measurement process and the process being measured and concludes that they are hopelessly intertwined.

In the social sciences logical positivism (Hemphill, 1950), operationalism, (Benjamin, 1955) selective subjectionism (Eddington, 1920) have all contributed to the contamination of the measurement method with the measured process. Research goals have become redefined in terms of research outcomes.

In this way a growing awareness of the principles of sociology and psychology have changed the behaviors of the subject being studied.

Cattell (1950) in his theories of personality concluded that man's behavior becomes more systematic as he understands and accepts as "true" those theories and principles which have been developed to systematically explain it. Cattell suggests that the number of factors in a personality questionnaire may reflect to some degree the complexity of the subject's theories concerning personality. George Kelly (1955) in his Psychology of Personal Constructs makes similar kinds of observations. He posits that each person is his own behavioral scientist who tests hypotheses concerning his own behavior and the behavior of others. As his theories are confirmed or infirmed, he organizes his behavior into more meaningful patterns. In this way the feedback from research as well as a person's own answers to questions may profoundly effect his future behavior.

At one mental hospital where the author consulted, there was a standing joke concerning the treatment effect of testing. The question whether a patient was improving was equated with which psychometric instruments they had taken. If the patient was not progressing, properly, the suggestion was made by the staff that "maybe we should give him the Rokeach or another round of MMPI".

The results of repetitive testing as reported by Howard (1965) and others show rather conclusively that the process of taking a test significantly changes the subject, at least, as it manifests itself in his test taking behavior. This fact has lead many psychometrists to develop retest norms for instruments which reflect the systematic changes which have occurred. In cases of face valid instruments it has been noticed by the author that a subject does begin to organize his self concepts to conform to the dimension

implied by the instrument when at the onset of the testing he had no crystalized opinion about himself in these areas.

The treatment effect of research becomes even more marked when consistent patterns of feedback are instituted. The athlete learns to integrate measurements of performance. The weight watcher learns to control his calorie intake by carefully observing the scales and the results of his various dietary experiments.

Some very dramatic examples of autonomic control have been found by the Russian scientist and a group in this country studying "biofeedback". Recently a colleague reported being able to voluntarily change his finger temperature ten degrees with the aid of a thermister and galvanometer which he monitored as he manipulated his own affective responses. The same sort of response to feedback has been reported by polygraph operators and has lead to the standard practicing of hiding the response of the instrument from highly affective subjects.

The research subject thus becomes an interacting part of the experimental situation. The measurements made of him affects his attitudes about the researchers but also about himself. He is changed in a systematic way as he cooperates in the research process. The skillful researchers recognizes this and establishes methods to either minimize this interaction or to optimize it in terms of the outcomes which are socially desirable.

The researchers has values for predictability but also for the uniqueness of individual's responses. In his research procedures, he consciously or unconsciously encourages the subject to behave in a meaningful manner. Most

subjects respond by increasing their own internal consistency by exploring their feelings and attitudes in the areas about which they are being questioned. As their initial fears and concerns are reduced they often find themselves facing problems much more objectively than before the study was instituted.

The psychological practitioner has long used the concept of catharsis as an intervening variable to explain the changes that discussion and disclosure have on the patient. Taking questionnaires and responding to interviews can be expected to have similar effects even though these changes have not been so thoroughly studied.

Prescriptive vs Descriptive Research:

Normally the scientist conducts research from an objective point of view. He hesitates to make the kinds of value judgments which are often needed if advice is to be given. He normally describes what exists and makes no prescriptions. He feels that his duty has been properly executed if he has properly exposed the problems and their antecedent conditions. He usually does not feel required to personally marshal the forces necessary to change those things which he has found to be detrimental to individuals and society. Mission-oriented research tends to reverse some of these trends. If the "mission" is to be accomplished changes must occur in prescribed directions.

Prescriptive research varies from descriptive research in some other important ways. The investigatory phase of this kind of research must be more selective in its scope. In order to be prescriptive, it must focus upon actionable variables. Other kinds of science are free to study any facet of a problem. Prescriptive research is primarily concerned with those variables that can be manipulated or changed. For this reason demographic or

ontogenetic variables are of little interest to the prescriptive researcher since they are not actionable, i.e., they can not be manipulated or changed.

What can or cannot be changed sometimes becomes a matter of costs which lie outside of the purview of a particular study. What are the psychic or monetary costs to change a system of management style for another? Does this mean that management styles can not be significantly changed? The prescriptive study often generates actionable systems. The options, however, must be possible or they are not options at all.

Prescriptive research can evolve from theoretical studies if the organization of the variable systems become sufficiently well understood that remote individual variables can be manipulated with predictable changes in the mission oriented variables. These may not have been perceived as actionable options at the beginning of the study but become so by the high level of determinacy generated.

The prescriptions which arise out of research takes numerous forms which in turn seems to suggest varying probabilities of success. In the behavioral sciences the three major options for recommendations seem to be: changing people, changing the people's perceptions of the system, and changing the systems. The former is often fraught with predicated side effects although some behavior modification experiments have been very successfully executed particularly with mental defectives or infrahuman subjects. Changing systems and individual perceptions frequently provides more fruitful alternatives.

TACTICS FOR IMPLEMENTING STRATEGIES

Having arrived at the correct strategies based upon the investigator's preference and the constraints supplied by organizational realities, it becomes necessary to plan the implementation tactics. An analysis of the

program and procedures followed by the Air Force of Scientific Research #2001, it is possible to present examples of some of the resolutions achieved to the basic strategy conflicts.

Applied vs Pure Research:

In the process of seeking viable solutions to retention problems as well as understanding the people systems which generate the problems, the researchers perceived that both applied and pure research were necessary. Since little research was available in the literature to indicate the depth and breadth of the problems let alone the solutions, the researchers approached the problems of retention with the naivete and innocence of the pure researcher. Making no assumptions as to the dynamic or any speculations concerning treatment, it was considered appropriate to establish some completely new system for conceptualization and analysis.

From the beginning the 381st Missile Wing Unit was viewed as an experimental organism upon which a large number of direct as well as unobtrusive measures (Webb et al, 1966) could be used. In line with pure research methodology not only natural observations but manipulative research were instituted. Since the project interval was sufficiently long to allow longitudinal study, systems of periodic monitoring were established with the hopes the treatment effects could be measured.

Method Centered vs Mission Centered:

In spite of the fact that project #2001 had to be mission-oriented because of legislative decree, as well as the investigator's preference, it was appropriate to bring to the task certain methodologies which the investigators had found successful in related research endeavors. The spring board

from which most researchers plunge into mission-centered research is the method-centered research which they have successfully employed in the past. In this project, Dr. Sweney brought to the research highly refined methods for analyzing power structures within organizations. Dr. Campbell applied theories and methodology concerning communication networks and information flow patterns within organizations by concentrating upon familiar instruments and methods. The mission of the research project could first be interpreted in terms of these operations.

Since the research was not limited to the methods already mentioned, it became appropriate to develop a divergent research strategy which involved the development of 10 to 15 independent research task forces. Each of these employed a different methodology directed toward the same general "mission" that of uncovering the dynamics involved in increasing retention, improving unit effectiveness, and maximizing the quality of life experienced by the unit member. The utilization of multidisciplinary approaches and the research team organizational structure made it possible to launch considerable independent research simultaneously with a maximum potentiality of truly independent replication and mutual confirmation.

Model Testing vs Sample Description:

A compromise between sample description and model testing seemed to be indicated for AFSOR # 2001. It was important to provide information to the various unit commanders concerning the dynamics of their organizations and the characteristics of their men. It was, however, important to the investigators to test certain systematic models which had generalizable applicability and theoretical importance in other contexts. Sweney utilized this opportunity

to test the Response to Power Model as a dynamic system to explain interpersonal perceptions, superior and subordinate influences on each other, and sources of rating bias. Campbell tested the model of man as an organizer of communication and the implication which this assumption had upon his behavior and the outcomes of organizational life. Later Dr. Belt arrived to test his predictive models involving resistance to change and incentive effects of various re-enforcing conditions on perceived satisfaction in pursuing a repetitive task.

Research Study vs Research Programs:

The history of science has been highly dependent upon programmatic research. Project # 2001 represents a single way station along a well planned route of scientific travel for both the researchers and military research in general. Each project is important and significant in its own right but its greater significance is always measured in the context of other studies in the same program. The development of the RPM model and the instruments used to measure it antedated the project and had already yielded meaningful results in industrial applications. The particular context of the military organization, however, placed special demands upon its usage but also furnished different potentials for successful results.

The integration of the research programs utilized by other individuals is important if the fabric of science itself is to become integrated. In this program a number of other research efforts were utilized. The adaptations of the basic research instruments developed by Herzberg (1959) were made into research tools, and concepts and instruments by R. B. Cattell (1950) were particularly useful since many of his findings with the bomber crews after World War II had

current implications for the research being conducted with Missile Crews. Some of the concepts developed by Fiedler (1967) for predicting leadership effectiveness had meaningful counter parts in the RPM model and in the rating behavior found within the unit. In most cases integration of this type enhances the meaningfulness of all research view points.

Within a research program it is sometimes possible and even desirable to develop isolated studies in novel but related areas. Very often such studies share the mission but embark upon completely different methodologies. Examples of this in the project #2001 would be the rating game, the research on the researchers and the study of social indicators. Each of these represented non-unit oriented researches but each of them had as its focus basic applications to the larger research project. In addition, concurrent parallel studies were conducted in industry to replicate the findings in the military unit. The high rate of replication vindicated this process and recommends it for use for others.

Treatment Research vs Investigatory Research:

Implied in the statement of the mission were changes in retention rate in the unit effectiveness and in the quality of life variables. Thus from the onset of the research, the requirements have been clear that research effort should have as one of its objectives changes in the "organism" which it was investigating. The maximization of the Hawthorne effect was intentional and it, therefore, became important that the presence of the researchers should be obvious and that the results should become common knowledge among the members of the unit. There is usually a conscious tendency to minimize the number of the subject-test hours required of a unit since it represents "downtime" when related to the actual operation schedules. In the case of this study, however,

this principle was less stringently applied since the treatment depended upon the interactions between the unit members and the investigators. In many cases replicative tests were administered to the same unit and the same experiments were applied to more than one unit to obtain wider coverage and greater generalizability.

In order to elicit support and maximize interactions, a complex set of briefings was scheduled. Consonant with military protocol, commanders were briefed first and independent and then they became instrumental in later sessions with the men in their command. These briefings were focused upon both objectives and purposes for the research as well as feedback sessions concerning the results of the research.

The development of a generalized feedback system was accomplished not only through briefings but also through preliminary reports and finished technical reports. In some cases individual feedback sessions were granted to person showing particular interest in the project. In nearly all cases results and implication were published to the unit through articles printed in the Entrails, a newspaper published by the research project for informational purposes.

One of the most effective treatment devices was the use of the unit personnel in the research effort. By involving them in special courses at the university as well as engaging them in thesis research work over 30 members of the unit, mostly officers, developed a knowledgeable involvement in the project and its findings. This participative research effort provided grass roots inputs as well as an informal communication network for disseminating objectives and the obtained results.

Prescriptive Research vs Descriptive Research:

As the research progresses it becomes increasingly apparent that the host unit and the sponsors at higher levels expect some prescriptions concerning how policies can be changed to give additional support to retention, unit effectiveness, and the quality of life. For this reason the investigations have been concerned with actionable variables which show some promise for implementative change. Since personality is so hard to change, the project has concentrated upon roles and perception behaviors. Aberrations in both power and communication systems are well within the realm of change in most cases but may in some cases imply needs for policy change at higher levels of command.

A researcher is usually out of his role when he is asked to look for implied policy changes. In most cases his knowledge is concentrated in more general areas and he is unfamiliar with the specifics that would be necessary to answer policy questions. If he is to be prescriptive of policy, however, it behooves him to not only learn about existing policies, but to study the effects of these policies upon the dependent variables which are the focus of his scientific investigation. In most cases the effects seem obvious and are accepted as axiomatic to the investigator but may not be as obvious to policy makers. The kinds of prescriptions involving policies often go unstated because of the investigator's unwillingness to be presumptuous or his fear of being identified as assuming a command role.

The best kinds of prescriptions which a scientist can make are tentative and furnish numerous alternatives. Since in most cases the practitioners in the systems are more familiar with the variety of variables affecting the system, the scientist can only provide recommendations and suggestions. The recommendations must focus upon actionable alternatives but should always imply the needs for technical and policy screening by the individuals who make up the larger system.

SUMMARY

Conducting mission-oriented research in military organization focuses attention upon some of the basic research considerations that should be implied in strategy decisions involved in research in any area. Recognition of these strategy questions can sharpen and widen research objectives. Because of the scarcity of financial and professional resources decisions concerning the scope and directions are usually necessary. If these decisions are to serve the investigators, then they must involve as rational a review of these alternative strategies as possible. Explicit answers to some of the conflicts presented are essential if a research is to have direction and adequately serve the causes of both the researchers and the sponsoring agency.

TABLE 1: SAMPLE OF STRATEGIES AND TACTICS FOR THE CONDUCT OF RESEARCH
ON APOSR Project #2001

Strategies	Tactics	Procedures - Programs
I. Applied vs Pure Research	A. Seek generalizable results B. Naturalistic C. Manipulative Research	A. 1. Inferential statistics 2. Stratified samples 3. Multivariate analysis B. 1. Study unit as is 2. Obtain unobtrusive measurements. C. 1. Institute subtle treatments 2. Monitor results
II. Method Centered vs Mission Centered Research	A. Utilize familiar instruments and methods B. Focus on mission C. Divergent research approaches Focus upon single mission	A. 1. RPM and related instruments 2. Correlational techniques B. 1. Retention 2. Unit Effectiveness 3. Quality of life C. 1. Multidisciplinary Approaches 2. Research Teams
III. Model Testing vs Sample Description	A. Test Response to Power Model (RPM) B. Test Model of man as communication C. Provide sample descriptions	A. 1. People perception 2. Superior-Subordinate Influence 3. Rating Bias B. 1. Communication Diary 2. Communication Tests C. 1. Unit description 2. Rank description
IV. Research Study vs Research Programs	A. Continue "program" studying RPM B. Integrate "programs" instituted by others C. Conduct isolated "studies" in novel related areas	A. 1. Compare Air Force results to industry 2. monitor changes B. 1. Adapt Herzberg's instruments 2. Use Cattell's 16 PF C. 1. Social conformity 2. Human Resource Accounting
V. Treatment Research vs Investigatory Research	A. Repeated measurement B. Inform subjects of objectives C. Inform subjects of results, groups or individuals	B. 1. Briefings-Preliminary 2. Informing Commanders and Officers 3. Give purpose of testing C. 1. Reports 2. Entrails articles 3. Post Research 4. Individual feedback sessions 5. Participative research
VI. Prescriptive vs Descriptive	A. Study actionable variables B. Look for implied policy changes C. Prescribe alternative system and procedures for a consideration and evaluation.	A. 1. Study roles 2. Aberrations in power and communication systems B. 1. Learn policy 2. Study effects of policies C. 1. Couch recommendations in actionable terms. 2. Recognize influence of larger systems not studied which dictate ultimate decisions

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

12 REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AFOSR/TR- 77-0970	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) STRATEGIES FOR CONDUCTING MISSION ORIENTED RESEARCH IN MILITARY ORGANIZATIONS.	5. TYPE OF REPORT & PERIOD COVERED Interim Scientific Report.	6. PERFORMING ORG. REPORT NUMBER 106
7. AUTHOR(s) Arthur B. Sweney/ Ph.D.	8. CONTRACT OR GRANT NUMBER(s) AFOSR-71-2001	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Center for Human Appraisal Wichita State University Wichita, Kansas 67208	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 61102F 2313/A3	
11. CONTROLLING OFFICE NAME AND ADDRESS Air Force Office of Scientific Research (NL) Bolling AFB DC 20332	12. REPORT DATE Apr 1972	13. NUMBER OF PAGES 23
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) TR-106	15. SECURITY CLASS. (of this report) Unclassified	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited. 15/AF-AFOSR-2001-71		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) 16/2313 17/A3		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Applied Research Prescription Treatment Research Programatic Research Mission Orientation Sample Description Model Testing		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The author outlines some of the dimensions to be considered in develop- ing research strategies for investigations in applied settings. The "Applied vs Pure" research is differentiated into a number of other more relevant continua. "Method Centered vs Mission Centered" research defines whether it is based upon the known or upon the unknown. "Model Testing vs Sample Descrip- tion" emphasizes whether descriptive or inferential results are sought. The (Cont'd on reverse)		

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"Program vs the Study" points out the fallacy of isolated investigation where a context has not been developed. "Treatment vs Investigatory Research" provides the dilemma of contamination of data by the method itself and whether it is the intention of applied research to leave the sample unchanged. "Prescriptive vs Descriptive Research" defines the problems which most scientists have in defining their research results into the form of actionable alternatives for remedial change.

The author explains how all of these strategy considerations have effected the conduct of research under this contract.

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