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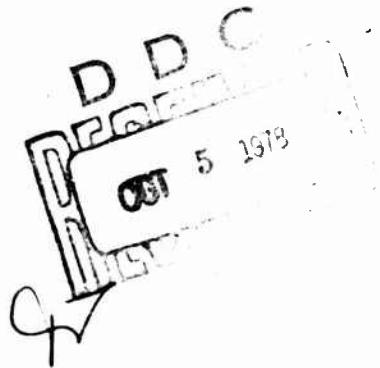
FINAL REPORT

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Prepared By

THE CENTER FOR HUMAN APPRAISAL
WICHITA STATE UNIVERSITY
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This report includes a brief discription of a large number of research activities into reenlistment, quality of life, superior/subordinate relationships and motivation. Included are three new superior/subordinate role models, a new model for intergrating motivation, discription of a number of newly devised psychological instruments, and a list of technical reports generated by these projects.		

FINAL REPORT
for
AFOSR- 76-2907 ■

By
Arthur B. Sweney
and
V. Ann Tubbs

Center for Human Appraisal
Wisconsin State University



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FINAL REPORT for AFOSR - 76-2907

by
Arthur B. Sweney
Center for Human Appraisal
Wichita State University

Introduction

The evaluation of a research effort such as the one conducted under this grant shares similar characteristics with the evaluation of a lifetime. Although many of the goals which were explicitly set were only partially satisfied, a large number of other activities and products were generated which were neither clearly prescribed nor could have been predicted at the onset of this research effort.

When this project was begun in 1969, the unpopular war in Vietnam was generating havoc among the members of our Armed Forces. There were indications of low job satisfaction, and the Air Force was having difficulty maintaining its personnel strength in selected career areas, especially in the Missile Field. At this time, it was unpopular to talk about reenlistment with one's peers, and it was assumed that many men who wanted to make a career in military organizations were finding it difficult to withstand the negative social pressure levied against them by their peers.

The student riots at Berkeley, Wisconsin, and Illinois indicated that there was a distinct conflict in values between generations and that this had potential implications for superior-subordinate relationships within the Armed Forces. It became clear that pressures and counter-pressures were being handled in dysfunctional ways and that no one was gaining and society was losing from the conflict which was generated.

Modern schools of management were studying directly the results of applying different management principles in leading organizations. Enlightened management had demonstrated in industrial organizations that increased

ADD SPECIAL for	
WIS	White Sect
DC	Buff Sectic
ANNOUNCED	
REGISTRATION	
DISPATCH/AVAILABILITY COL	
9/11 SPE	
A	

efficiency and higher job satisfaction could result from the relaxed atmosphere generated by trust and freedom to fail. Other research, however, was indicating that the problems involved in management were too complex to be explained away by a single leadership style. In addition, the question could validly be raised whether the findings generated from civilian research on commercial organizations could aptly be applied to military organizations.

In the same paradoxical manner with which governments and popular movements normally proceed, a great furor was generated at this time against social research in the defense department. Mansfield was successful in appending an amendment to a Congressional bill which required that all civilian research conducted in the military be "unit-connected, command approved, and mission relevant". These constraints would seemingly spell the death knoll for basic research in the behavioral areas. The Air Force Office of Scientific Research, whose primary function is to support basic research, had to reidentify its mission and seek programs which would serve two masters and satisfy the constraints placed by the Mansfield amendment and also satisfy the needs for basic research in the behavioral areas.

It was within this era and this social milieu that the Center for Human Appraisal submitted its proposal to study methods for measuring job satisfaction and to validate the Response to Power Model for studying role relationships between superiors and subordinates in Missile Combat teams. Although the proposal had scientific integrity and directed itself toward some very specific issues using some instruments which had already been developed, it also recognized a duty to the Air Force in general to seek out those kinds of information which have relevance to the broader issue of job satisfaction and to make its very presence within the host units a

test of the Hawthorne effect. Thus, the Center for Human Appraisal recognized the potentiality for a specialized role of civilian consultant to the Air Force on the social psychology of their organization, particularly as it effected Combat Missile Crews or the influence of leadership styles on job satisfaction and effectiveness.

EXPLICIT PURPOSES

The finally accepted proposal for this research project defined a number of explicit purposes. These were broken down into two major categories: the collection and analysis of data on Air Force management styles and procedures, and the preparation of materials to train Air Force managers to improve efficiency and effectiveness.

COLLECTION AND ANALYSIS OF DATA:

The primary focus for data collection was the Response to Power Model developed by Sweney to measure organizational role interaction between subordinates and superordinates. A careful step-by-step analysis was outlined to identify and resolve the important questions surrounding management relationships. Because the instruments derived from this model are based on a large number of logical assumptions, the ultimate validation of the instruments depended upon testing these assumptions in realistic settings. The close confinement and 3-tiered management system provided by the 4-man Missile Combat Crew was ideal for generating this kind of data.

Since retention and job satisfaction were important side issues both to the researchers and to their host unit, it was proposed that considerable attention be directed toward gathering data which would identify causes of dissatisfaction as well as unspoken attitudes which would ultimately shape their reenlistment decision. Although the term "morale" has lost some of its

technical flavor, the area which it covered is still an important set of variables for evaluating management efficiency as well as providing information which might augment material gathered from the Response to Power Model measures.

The research team perceived that one of the products which would have indirect effect upon the total system was the calculation of the *cost benefits associated with retention*. This required that a study be made of the value of a Missile Officer both in terms of his own cost to the organization as well as cost of replacement. Recent developments in the area of Manpower Accounting have provided the ground rules for making this kind of assessment, but the research team suggested that refined methods would have to be developed, especially tailored to the complex training and preparation of Air Force specialists.

Questions of *formal and informal power* seem to be particularly appropriate when viewing bureaucratic organizations which focus on appearances rather than actual operation. The researchers recognize the opportunity of comparing informal power structures within the organization against the formal structures identified by the organizational charts and by the role relationships measured with the Response to Power battery. Although this was not defined as a major focus, it was seen as having an illuminative effect upon the operation of formal organizational systems and the aberrations within that system when communications become invalid.

Since one of the primary investigators specialized in the area of *communication*, a number of research projects were formulated to study the effects of communication upon efficiency and job satisfaction. It was expected that the mode of communication as well as the mix of information and

redundancy could not only be effectively measured, but would also be found to have direct relevance to the other dependent and independent variables measured within the context of the larger study. Since the instrumentation in this area seemed to be inadequate to meet the researchers' needs, this was foreseen to be one of the task areas requiring new instrument development.

The researchers recognized that the complex data pool which they were going to sample would require some special techniques for retrieval and analysis. The technologies for handling individual differences are fairly simple and straightforward. The demands placed upon analyses involving relationships and complex interactions between various levels of an organization require not only special methodologies but also special concepts and constructs for describing the activities which have taken place. It was therefore proposed that out of this research would come some new techniques in system analysis of the behavior in organizations as well as some clearer terminology for describing the relationship between two individuals in a power hierarchy.

It was recognized and proposed that traditional *multivariate experimental techniques* would be applied to separate the variance associated with individual roles from those associated with the interaction within the organization. Factor analysis, discriminate analysis, multiple regression, and canonical correlation techniques each had a special application to the larger study which was proposed. These established methods have limitations which the researchers hoped they could overcome at least for the specialized case provided by their research organism, the Missile Combat Crew.

TRAINING MATERIALS:

Although the term *organizational development* had not yet reached its present fullness of meaning, the researchers perceived that their role with the Air Force would not only be as data collectors, but also data utilizers. Since the Response to Power Model is an action paradigm, some of its implications need to be subjected to the test of utility. New members of operational units find this method of viewing relationships tension reducing and instructive. This is one of the questions that had to be answered through the development of training techniques. It was recognized that certain basic validation must be accomplished before any program for disseminating information was launched. Nevertheless, instruments were developed and data analyzed in ways which would make them particularly useful for training purposes when the proper time arrived.

Although it was perceived to be advantageous to postpone the massive training effort until a full armory of data had been collected, the researchers perceived that there would be many opportunities for unobtrusive training to take place during different phases of data collection and feedback concerning the results of specialized instruments or research questions. The researchers subscribe completely to the codes of ethics involving the use of human subjects, and, hence, recognize their primary obligation to provide their subjects with sufficient information concerning the experiment to offset any human costs which their participation might involve. This was seen not only as an obligation, but also as an opportunity to communicate important information as well as to insure a higher quality of participative effort.

At the end of each phase as well as when the information became important to the host units, the researchers recognized that they should be

prepared to give briefings and respond to questioning concerning the nature and results of their inquiry. Recognizing the normal modes of operation within the military services, the researchers realized that these would serve as training opportunities for persons high within the military command whose inputs might have high ultimate impact upon how the organizations function.

IMPLICIT PURPOSES

Although there is no requirement in a document of this sort for candor, the author feels it important to underline some of the implicit purposes for this study in order to appropriately set the stage for the results which are published here. The formal proposal which was ultimately accepted by the Air Force Office of Scientific Research included a broad range of research and training programs directed toward understanding more effectively power relationships within a hierarchy and the implications of these relationships on morale and retention. At this critical period in our history, it appeared important to the researchers that their inputs have a positive impact upon the Air Force and the problems with which they were grappling. Although there were no specific doctrines which the researchers wished to further, they had a deep concern that their findings be distributed to the proper individuals whose decisions affected Air Force policies and procedures. These and other objectives seemed to motivate the researchers in their pursuit of this particular project.

INCREASED CIVILIAN RESPECT:

The researchers felt that some adequate, rational data should replace the emotionalism generated by student activists who sought to discredit the military establishment. Whereas the researchers did not consider themselves militaristic, they recognized that civilian respect could be gained

through solid data rather than through invective. One of the implicit purposes of this team, therefore, was to increase civilian respect for its military organization by dispelling some of the stereotypes and myths which surround their behavior. As a purpose, this was not perceived to be in conflict with the other scientific objectives, and if it proved to be so, the researchers had already pledged to report those facts which they had found. Since a researcher's duty is to measure and describe rather than to evaluate, he finds subjective vituperation distasteful and unfair since it gathers its strength from ignoring rather than addressing the true complexity of behavioral systems.

ENCOURAGE R.O.T.C. UNITS:

At the time this project was proposed, R.O.T.C. units were having difficulties surviving on college campuses. Not only were they failing to attract a sufficient number of men and women, they were also becoming the targets of emotional attacks against the Vietnam war. Activism and sensationalism were depriving students of their rights to exercise personal liberty in deciding on options of how to pursue their lives. It was, therefore, foreseen that this project could provide information at the student level which would help them determine the objective merits of R.O.T.C. rather than to be deprived of the option through sensationalistic handling of the issue.

ENCOURAGE BEHAVIORAL RESEARCH:

The Center for Human Appraisal was established to foster basic behavioral research under the aegis of the College of Business. The development of an enlightened business community begins in the college, where their initial preparation takes place. If the need for information and the virtue of objectivity are to be developed, they must be accomplished not through

indoctrination, but through the self discipline imposed by the scientific method. The riddles of human behavior are not impossible to solve, and the adoption of shortcuts and popular truths will only perpetuate the aura of magic and myths which surrounds business practices and policies. The legitimation of behavioral research, therefore, becomes important both to creative inputs by the researchers but also to the ultimate effectiveness of our economic system and the nation to which we pledge our loyalty. This project was seen as an opportunity to demonstrate the pragmatic values of behavior research to both military and commercial organizations. Its budget and structure were arranged to maximally involve students and faculty members at all levels so that they could become intimately acquainted with situationally relevant behavioral research.

DEVELOP USABLE CIVILIAN MODELS:

Whereas the development of meaningful behavioral models for military organizations is important, the researchers hoped that the models which they were developing and testing might have meaningful implications for commercial concerns. They perceived an opportunity to enhance their role as classroom teachers by firsthand information concerning organizational behavior. They were not expecting to find different dynamics nor different role preferences for their military subjects. If slight differences did occur, they expected that they could be explained through systems analysis rather than regression to stereotypic thinking. The unitary experience of organizational life was assumed as a given, and, hence, one of the major spinoffs of the research was perceived to reside in its applicability to civilian organizations.

IMPROVE QUALITY OF LIFE:

A latent value in the researcher's scientific quest is the hope of increasing goodwill and quality of life. To the researchers, work can be

an important vehicle for satisfying basic needs, and through it, reaching a higher quality of life than is currently being experienced. Whether working in a factory, teaching school, or participating in the Armed Forces, an individual derives both satisfaction and frustration from the demands placed upon him by his work. The search for meaningful work has taken on the same mystical qualities that have made terms like morale no longer scientifically respectable. Nevertheless, one of the implicit hopes of the researchers was to uncover data which would have direct relevance to quality dynamics and which would help define more direct routes for obtaining it in whatever work setting an individual might find himself. Because of hearsay and invidious reputation, the military establishment seems to offer a high challenge as well as a rich laboratory for studying this very vital question.

PRODUCTS

It is difficult to select the proper categories for classifying the products of an enterprise such as AFOSR #2001. The initial proposal promised answers to questions involving superior-subordinate role relationships as well as the development of some innovative research paradigm. It tallying up the score, however, it becomes obvious that a much larger range of products and by-products have resulted from the project and that these must be classified and described in order to be properly evaluated. For the benefit of this report, the products are listed as new concepts and models, tests and surveys, games and exercises, audio-visual aids, distributed papers, journal articles, technical reports, books and theses, and intangibles. Most of the products resulting from this research effort can be classified under one or more of these headings.

NEW MODELS

The very core of any research effort is the development of concepts, constructs, or models which can serve as explanatory devices and which help articulate crucial questions and inquiries. Impirical or experimental research has little value unless it endeavors to verify or clarify conceptual models. This is particularly an earmark of basic research. The development of concepts and models in the behavioral sciences has been one of its weaknesses and at the same time explains the often lack of tangible results at the end of many research efforts. Whereas this project was begun with a single model in mind with its own set of identifying constructs, it was expected that new models and concepts would emerge which would enrich our basic understanding of organizational behavior and interpersonal relationships.

RESEARCH STRATEGIES:

One of the most important tasks of the project was to develop models and concepts for identifying the methods of operation of research teams within military organizations. An opportunity was afforded by the Third Annual Symposium for Psychology in the Air Force to design a paper to deal with these essential problems. *Strategies for Conducting Mission Oriented Research in Military Organizations* presented some important distinctions and dimensions for identifying research opportunities and situational constraints. The paper endeavored to clarify distinctions between applied and pure research, between method centered and mission centered research, the difference between testing models and describing samples, the distinction between a research study and a research program, treatment research from investigative research, prescriptive versus descriptive research, and made some effort to define the roles of the research team in each of these areas. This formulation of strategies became very important in later investigative

activities and served as an important piece of communication for defining the Center's role in conducting research.

PERSONALITY MODELS:

One of the handicaps placed upon the behavioral scientists' communication with each other and with persons outside their discipline is their lack of consensus concerning commonly used terms. Since many of the words used in the behavioral sciences have been adapted from common parlance, they often lack the specificity of connotation or denotation necessary for exact communication. This ambiguity is particularly noticeable when dealing with the area of individual differences. Personality as a construct has provided particular difficulties since it has hypothetical qualities which are often not directly measurable. Although most psychologists view personality from either a trait or type perspective, questions of mediation or development are often either ignored or handled independently from the perceived constructs. Dr. Sweney, in his *Models Implicit in Personality Research*, suggests seven basically different perspectives for viewing the individual differences which are commonly called personality. The models which he presents are supported by research methodology required for measuring them, and each suggests a different set of generalizations which can be inferred from these measurements. His models are identified as the stimulus value or evocative model, the introspective or reflective model, the behavioristic or proactive model, the response or reactive model, the imperfect transducer or distortive model, the implicit restriction or inhibitory model, and the systems or iterative model. These implicit models generate data gathering strategies which ultimately influence the kinds of constructs which can be generated. A full discussion of these consequences is developed in the paper

and the implications are related to meaningful research.

MULTIVARIATE SYSTEMS PREDICTION MODEL:

The needs to relate causal factors to resulting conditions has depended strongly upon multivariate statistics. As the research project progressed, it became obvious that new methods must be devised for relating not two but three groups of variables. These could be classed as dependent, independent, and modulation variables. Since all correlational techniques depend upon pairwise comparisons, new methods involving three-way statistical manipulations were required. *The Multivariate Systems Prediction Model* was developed to fulfill these needs. It suggests that modulator variables be broken into two classes, those which logically modulate inputs, and those which modulate outputs. By controlling the dimensionality of the variable matrices, to enable matrix multiplication, it is possible to solve the matrix equations directly for the weighting matrix which will result in equivalency. The weightings derived from this process can be directly applied to new subjects and new conditions to predict outcomes. This process does not yield correlations nor latent factors, but does provide a set of pragmatic weights which can be used for prediction purposes but also indirectly measure the relative importance of various combinations of input and modulator variables.

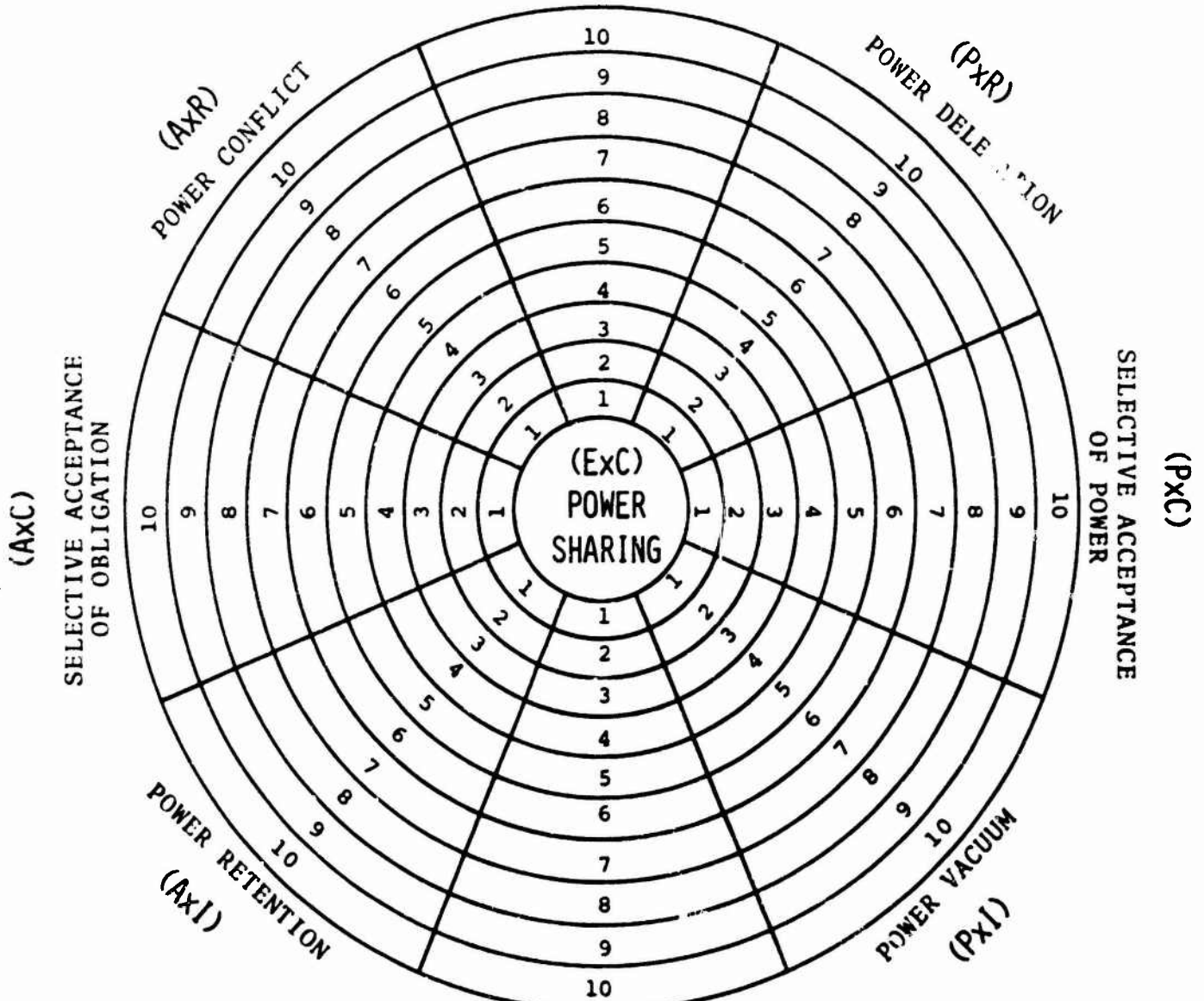
It is not too surprising that the Response to Power Model, once examined in a realistic context, should develop auxiliary models to amplify its descriptive power. Those models which were developed support basic interpretations, but identify interactive modes and relationships. Those related models in all cases represent ramifications which had not been considered prior to the research project and, hence, can be directly attributable to the analytical and deductive processes generated by the project.

INTERPERSONAL POWER PROFILE:

The *Interpersonal Power Profile* represents a direct method for measuring

INTERPERSONAL POWER PROFILE

(ExR)
SELECTIVE DELEGATION
OF POWER



SELECTIVE DELEGATION
OF OBLIGATION
(ExI)

RI & SAS

RPM

SUPERORDINATE

Name

Position

SUBORDINATE

Name

Position

INTERPERSONAL POWER PROFILE CALCULATIONS

INTERACTION	SUPERORDINATE'S ROLES (Stens)	SUBORDINATE'S ROLES (Stens)	PRODUCT — X —	STEN VALUE
POWER SHARING	E =	C =		
SELECTIVE DELEGATION OF POWER	E =	R =		
SELECTIVE DELEGATION OF OBLIGATION	E =	I =		
POWER DELEGATION	P =	R =		
SELECTIVE ACCEPTANCE OF POWER	P =	C =		
POWER VACUUM	P =	I =		
POWER RETENTION	A =	I =		
SELECTIVE ACCEPTANCE OF OBLIGATION	A =	C =		
POWER CONFLICT	A =	R =		
HARMONY INDEX				

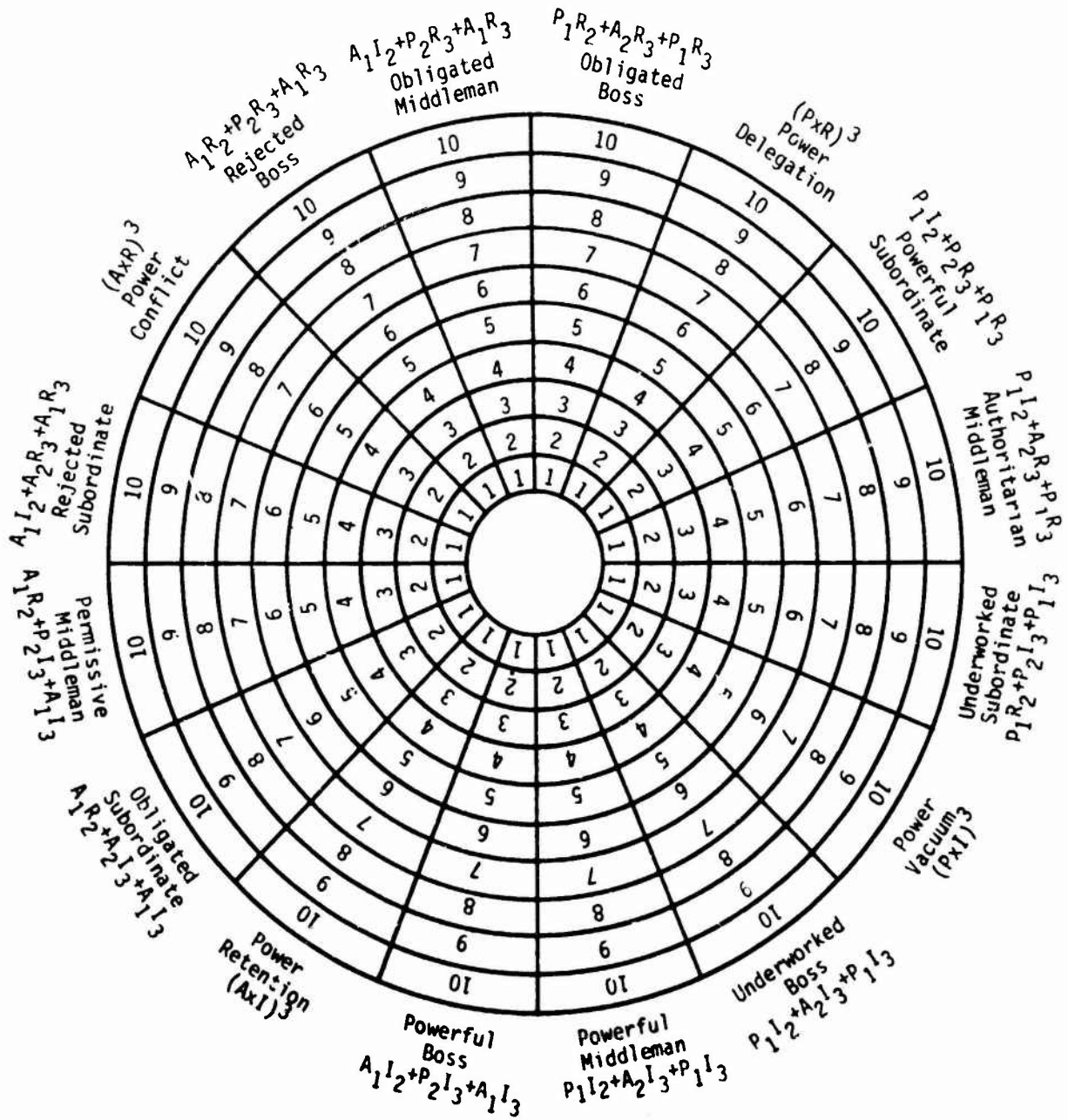
interpersonal relationships within a hierarchical structure. The model utilizes tests already developed for the RPM model but is scored and collated to describe the intersections of relationships existing between dyads along the chain of command. As Figure 1 illustrates, the Interpersonal Power Profile is composed of 9 intersections of superordinate roles with subordinate roles. These intersections are entitled power conflict, power vacuum, power delegation, power retention, selective delegation of power, selective delegation of obligation, selective acceptance of obligation, selective acceptance of power, and power sharing. This model can be implemented by the use of norms and standard scores in the same way that any other instrument can be used. This provides a graphic method for analyzing the relationship between members in adjacent slots in an organization, but also illustrates some methods for rational management. By identifying extreme positions, it implies the methods for moving from these positions to more optimal power relationships. Details concerning this model are discussed in a tech report.

ORGANIZATIONAL STRUCTURE ANALYSIS:

The *Organizational Structure Analysis* resulted from early attempts to plot the power relationship shared in a 3-man chain of command. After the more obvious combinations had been examined, it became apparent that all possible combinations should be studied if an adequate description of the relationship were to be exposed. By handling the manipulative roles on one side of the profile sheet and the flexible roles on the other, the number of combinations required were sufficiently distributed on both sides to keep the profiles manageable and to emphasize contrasting attributes. The identity of specialized relationships within an organizational structure is somewhat difficult, but tentative titles have been applied until further

ORGANIZATIONAL STRUCTURE ANALYSIS

RIGIDITY PROFILE



RPM

SAS/RI

Organization _____ Date _____

Superordinate _____

Middle Manager _____

Subordinate _____

TSI

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data would clearly identify more predominant manifestations. Some of the structural components identified would be rejected boss, obligated middleman, obligated boss, the powerful subordinate, the authoritarian middleman, the underworked boss, the power middleman, the obligated subordinate, and the rejected subordinate. The structural components from the flexibility profile are more difficult to identify since they often reflect a variation in a normal equalitarian-critic set of relationships. This profile includes such terms as flexible middleman in a power conflict, confrontive middleman in a flexible organization, expressive middleman in an authoritarian organization, and others. Figure 2 illustrates the flexibility profile, and Figure 3 illustrates the rigidity profile. The measure of applicability of these various components is arrived at through the combination of terms illustrated by each structural unit. The norms utilized are empirically derived and standard scores can be calculated and plotted. Whereas the project was successful in outlining this system for organizational structure analysis, and the system was applied to various units within the Air Force, the system has not been validated against participant perceptions, nor have these various components been reconstructed in experimental settings to measure direct manifestations of the role interactions.

ROLE REACTION MODEL:

The *Role Reaction Model* was developed to explain the seemingly contradictory results obtained in some of the empirical research, but also to incorporate major viewpoints of the seemingly opposing theories of humanism and reinforcement. In the initial briefings involving the RPM model, it became clear that the simple six roles and their theoretical interactions could not explain all of the transactions which normally characterize the

interactions between superiors and subordinates. It did seem to be true that sometimes authoritarianism generated rebellion and that permissiveness encouraged goodwill and positive willingness. This set of ambiguities made it necessary to review and reconsider some of the basic assumptions behind the RPM.

The conclusion and solution seemed to be the necessity to expand and delineate two different components in each of the four manipulative roles. One set of components can be considered the result of attempts to accommodate and to functionally interact. The other set of components represents an effort to thwart and to counteract roles held by the other participants in the management relationship. Analysis and logic indicate that both the behaviors and the motives for holding these kinds of roles are vastly different. For example, the authoritarian interactive role seems to meet dependency needs by providing structure and making decisions. The authoritarian counteractive role, however, is directed toward thwarting the efforts of a rebellious subordinate from taking power which he doesn't deserve. In each case, the individual is exhibiting authoritarian behavior broadly defined, but the specifics surrounding the behavior have vastly differed implications and results. Figure 4 illustrated the RRT and a more thorough handling of the topic can be obtained from the tech reports directed toward its explanation and the studies in which it was utilized.

POWER AND OBLIGATION MODEL:

The clarification of terms and management jargon demanded the development of a model for operationally defining them.

Role Reaction Test PROFILE SHEET

NAME _____ SEX M F AGE _____
 last first middle
 PLACE _____ FORM _____ DATE _____

Scale	Raw Score	Sten Score
E	_____	_____
C	_____	_____
AC	_____	_____
PC	_____	_____
RC	_____	_____
IC	_____	_____
AI	_____	_____
PI	_____	_____
RI	_____	_____
II	_____	_____

Scale	Sten 1	Sten 2	Total	Final Sten
Ex	RI _____	PI _____	_____	_____
Su	PC _____	IC _____	_____	_____
Cr	AI _____	II _____	_____	_____
Co	AC _____	RC _____	_____	_____
Ob	E _____	C _____	_____	_____
SP	AC _____	AI _____	E _____	PC _____
Ag	Number of "T" _____			
In	Number of "?" _____			

Nonexpressive	. . . . .	Expressive
Nonsupportive	. . . . .	Supportive
Noncontrolled	. . . . .	Controlled
Nonconfrontive	. . . . .	Confrontive
Nonobjective	. . . . .	Objective
Subordinate	. . . . .	Superordinate
Negative	. . . . .	Agreeable
Indecisive	. . . . .	Decisive

LOW SCORE 1 2 3 4 5 6 7 8 9 10 HIGH SCORE

average

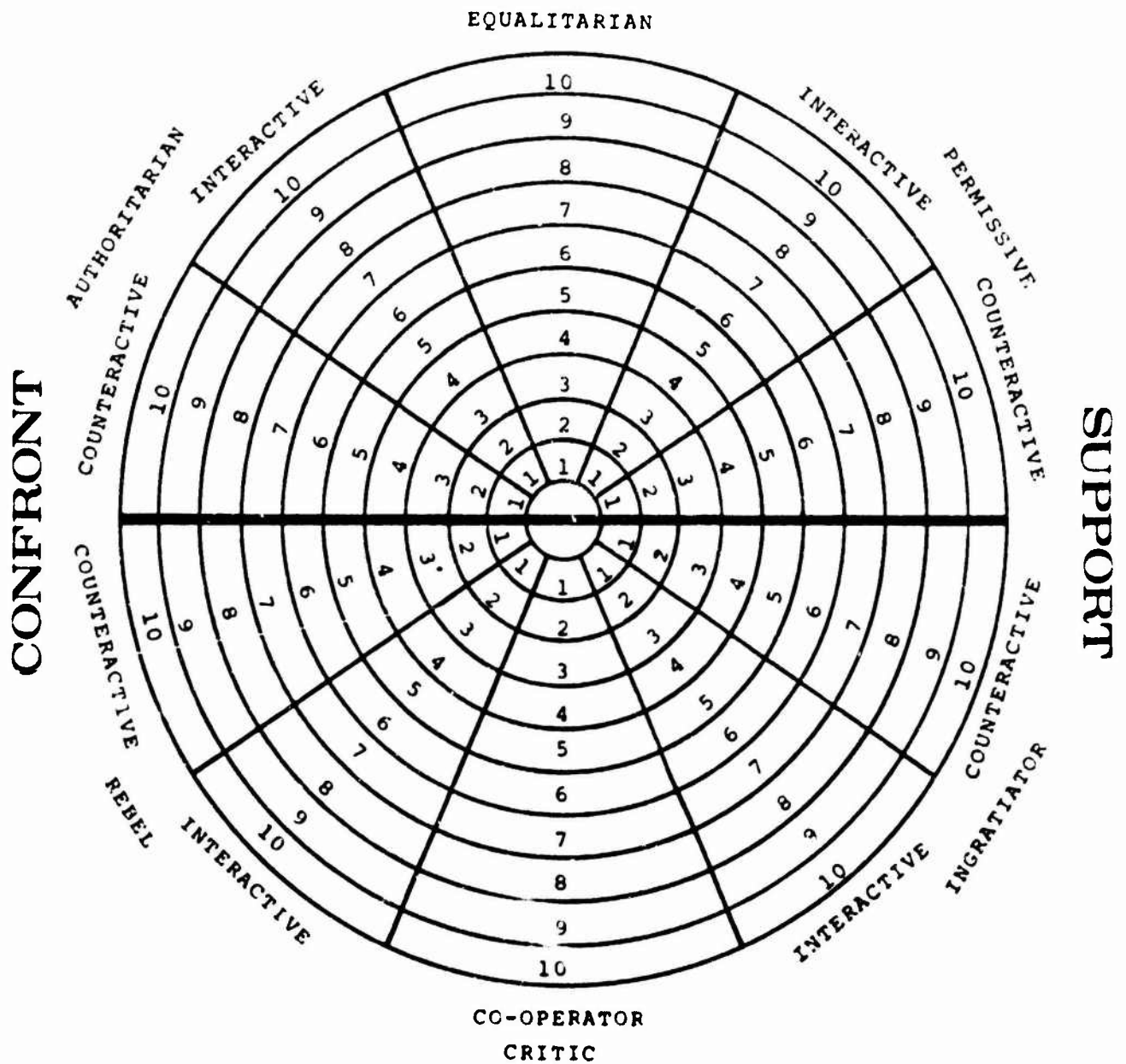
LOW SCORE 1 2 3 4 5 6 7 8 9 10 HIGH SCORE

average

RRT

PROFILE SHEET

SUPERORDINATE ROLES



SUBORDINATE ROLES

FIGURE 1: OPERATIONAL DEFINITIONS OF POWER AND OBLIGATION.

POWER OBLIGATION

Energy

Load

<p>AUTHORITY</p> <p>POSITIONAL PROCEDURAL</p> <p>Plans, organizes, delegates downward</p> <p><i>Explicit expectations</i></p>	<p>ACCOUNTABILITY</p> <p>POSITIONAL PROCEDURAL</p> <p>Obey, fulfill, yield conform, delegated from above</p> <p><i>Explicit compliance</i></p>
<p>LEADERSHIP</p> <p>POSITIONAL PROCEDURAL</p> <p>Mutual need satisfaction through congruent objectives</p> <p><i>Implicit expectations</i></p>	<p>RESPONSIBILITY</p> <p>POSITIONAL PROCEDURAL</p> <p>Mutual need satisfaction through congruent objectives</p> <p><i>Willing interest</i></p>

FORMAL

Organizational

INFORMAL

Psychological

NEW CONCEPTS DEVELOPED

Although the primary thrust of the research was validation of existing models and concepts, as the research progressed, new concepts and hypothetical constructs emerged as being explanatory of the results obtained or as foundations for new research extensions. Over the research period, most of these new concepts became an integral part of briefings and other explanations of organizational dynamics. Most of the new concepts seem to coordinate closely to basic research efforts in the superior-subordinate role relationships. A few of the concepts were developed to explain results found by other task forces within the larger project.

HARMONY INDEX:

The *Harmony Index* concept provides a single index for measuring the amount of compatibility between the superior and the subordinate. Early formulations of this equation placed unit positive weights upon all symbiotic relationships and unit negative weights on conflicting ones. Further research into the nature of stress indicated a graduated set of relationships placing the conflicting relationship as the most stressful, and the mutual relationship as the least.

It also became apparent that this simple formulation of weighted interaction scores between superiors and subordinates could serve as a vehicle for tying together the three basic components of management; the leader, the lead, and the situation. In the equation listed, the variable coefficients are calculated through multiple regression and the superordinate's role scores and the subordinate role scores are multiplied by a coefficient which represents the suitability of that particular combination of roles to a particular situation. Thus, the *Harmony Index* becomes the measure of the degree of satisfaction obtained through the coincidence of particular

role styles on the part of the superordinates and subordinates in any focal situation.

$$HI = a + b_1 A_{sup}R_{sub} + b_2 A_{sup}C_{sub} + b_3 A_{sup}I_{sub} + b_4 E_{sup}R_{sub} + b_5 E_{sup}C_{sub} + b_6 E_{sup}I_{sub} + b_7 P_{sup}R_{sub} + b_8 P_{sup}C_{sub} + b_9 P_{sup}I_{sub}$$

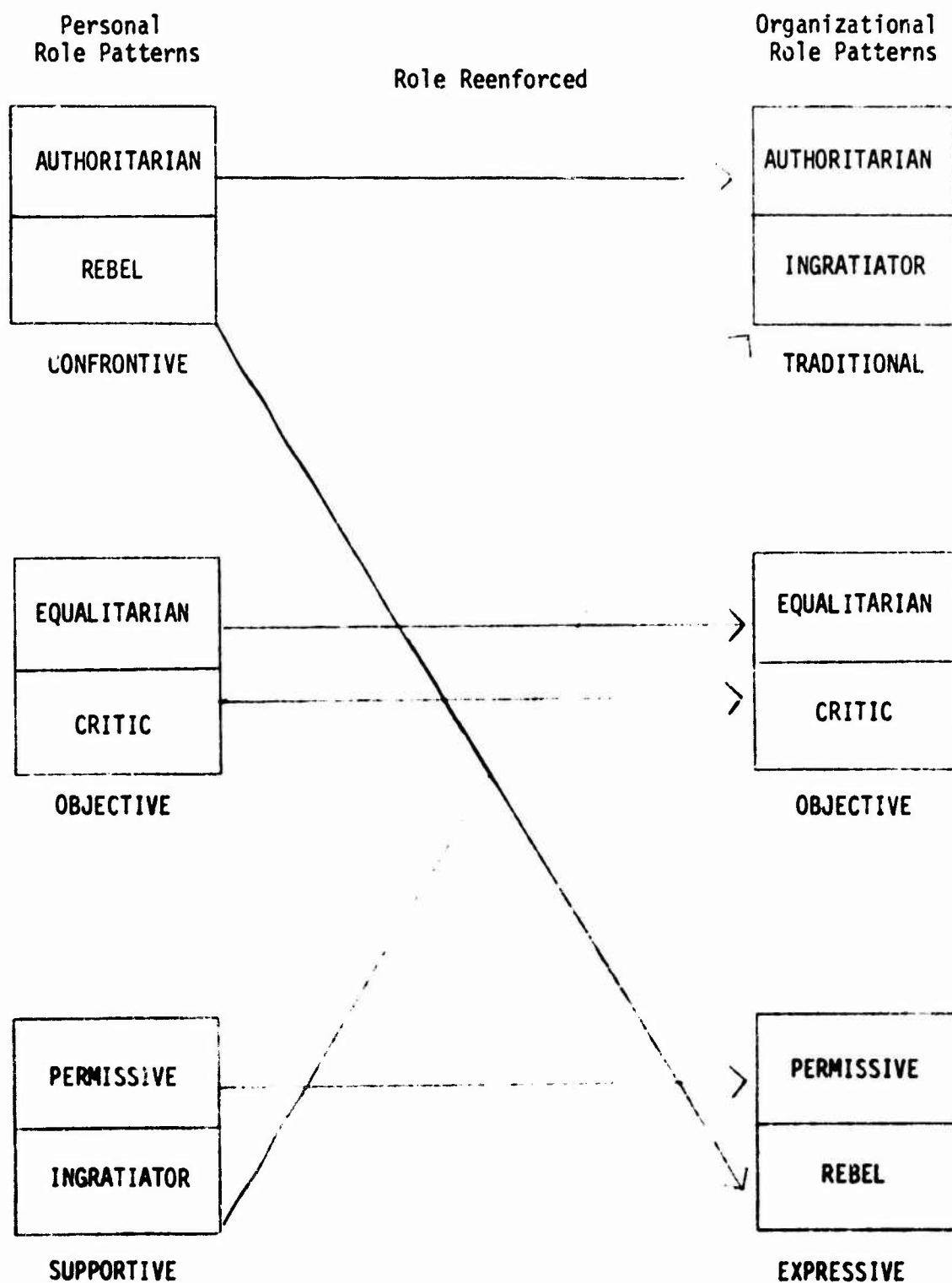
ORGANIZATIONAL MATURITY:

Organizational Maturity is a construct developed to measure the longitudinal evolution of role styles within an individual. Although the formulation bears considerable resemblance to the *Harmony Index*, the latter is interpersonal whereas the *Organizational Maturity* has only intrapersonal implications. It suggests that the individual first adopts a personal value position in dealing with other persons in his environment. Thus, he would be either confrontive, supportive, or objective when dealing with both superiors and subordinates. As he becomes accustomed to the operations of a hierarchy, however, he then recognizes the distinctions between superiors and subordinates and adopts complimentary roles within himself to be consistent with the outside distinctions which he perceives. Thus, the confrontive individual may retain his confrontiveness when dealing with subordinates but adopt a supportive role when dealing with superordinates as is the case for traditional organizations. This change in roles represents a refinement of earlier behavior, and is perceived to be associated with maturing relationships within the organization. Figure 5 shows this process.

The process of organizational maturity is fostered through social reinforcement activities and very often represents a higher form of reality, based not upon ideal circumstances, but rather the pressures within an organization to conform to the demand for complimentary roles. Research in this area has demonstrated significant correlation between the age and responsibility that individuals hold and the graduated maturity level of their internally held organizational roles.

Figure

Reinforcement Processes for Changing Personal Role Patterns into Organizational Role Patterns



$$OM = \frac{AI + PR}{AR + PI} + .01 EC$$

This concept opens some new challenges and possibilities for career training and aiding the acculturation to organizational life. The anthropologists have suggested that the process of socialization may be more important to organizational adjustment than is formal education. The *Organizational Maturity* concept would indicate precisely the steps that the acculturation process would follow and the ultimate product when it was successfully completed. Thus, objective organizational roles reflect both the individual's personal maturity, but also the degree to which he has become socialized to organizational life and recognizes those elements which create interpersonal harmony. This may be the pattern within himself which gives a maximum freedom from internal or external conflict.

GRADUATED ROLE RELATIONSHIPS:

As the research progressed, it became increasingly obvious that some of the ad hoc assumptions concerning organizational role relationships were not supportable by the evidence. The adaptive nature of authoritarian-ingratiating and permissive-rebel combinations proved less advantageous than theorized. It also became apparent that combinations involving mixtures of the manipulative roles and the objective ones had to be labeled and dealt with since they represent 4 of the 9 possible combinations. Research in both military and industrial settings showed a clear graduation of relationships and suggested that these various stages of relationships needed formal titles in order to emphasize their particular qualities.

The most stressful of all combinations seems to be the conflictive or competitive relationships in which both members of the social exchange are looking for the same payoffs and are prepared to pay the same prices. This

leads to a paucity of needs that can be exchanged and a hypersensitivity to the frustration generated by competition over the same needs. The power conflict between the rebel and the authoritarian, and the obligation conflict between the permissive and ingratiator are the two examples possible within the Response to Power Model for this kind of relationship. The researchers all demonstrated beyond any question of a doubt that these two relationships are the least satisfying of those possible.

The next least satisfying combinations are the *symbiotic* or *complementary relationships*. This represented one of the serendipitous findings of the research. The permissive-rebel relationship and the authoritarian-ingratiating relationships become fixed because of the positive feedback and reinforcement provided by each party. They do, however, represent a locked-in position which carry with them frustration and lack of flexibility for the individual participants. Like the neurotic interactions in marriage or the dysfunctional games people play, the recognition of the symbiotic dynamics do not alleviate the feelings of stress which the individuals experienced. Whereas the original theory suggested these to be highly desired role combinations, experience demonstrated that they are only silently endured.

The mixed roles involving equalitarianism and manipulative subordinate roles or critic and manipulating superordinate roles were shown by the *Interpersonal Power Analysis* to have particular dynamic qualities. Rather than being locked in as was the case for the conflictive and complimentary relationships, these mixed relationships are dynamic and transitory. They seem to place pressure upon the individuals within the relationship to move toward a more objective basis for interaction. For this reason, these mixed

roles have been identified as *evolving relationships*. They were also found to be next to the most satisfying of the relationships held. All four of these evolving relationships tend to move the parties toward an honest power-sharing relationship.

The research confirmed what the RPM model had theorized; that the equalitarian-critic relationship was both the most satisfying and also the most effective of the nine relationships possible. This power-sharing relationship provides the greatest degree of flexibility and has been designated a *mutual relationship* since mutuality has replaced manipulation as the basis for interaction.

INTERACTIVE VS COUNTERACTIVE ROLE BEHAVIORS:

Whereas the six roles in the *Response to Power Model* designated simple individually generated behaviors, research indicated the need for a more interactive model when describing organizational behavior. To meet this need, the *Role Reaction Model* was developed, and with it came certain assumptions concerning the purposiveness of organizational role behaviors. Being an interactive model, it suggested that neither the superordinate or subordinate expressed his role behavior in a vacuum, and, hence, implicitly accommodated to those role behaviors which he was encountering from the other member of the management dyad. His reaction can be one of interaction, counteraction, or mutuality, depending upon the dominance and threat which the roles of the other participants might generate. Just as Murray () distinguished reactive from proactive behavior, the interactive sequence suggests an acknowledgment and accommodation to a symbiotic role style while the counteractive roles represent efforts to change and modify current conditions by forcing the other member of the dyad to assume a more conciliatory

position. As might be expected, the mutual roles of equalitarian-critic are not oriented toward maintenance synergy and, hence, do not need to conform to the interactive demands on the relationship.

The consistency of the *Role Reaction Model* with the other research involving interpersonal power relationships is more than coincidental. Initial research findings with the RPM model indicated that the influences of superiors on subordinates as well as subordinates on their superordinates did not yield the level of correlations expected. It, thus, became apparent that more than one dynamic was operating between the management members and that the manipulative roles were more complex than first posited. Although the RRM is more complex and, hence, less intuitively satisfying, the differentiated roles provide a higher level of empirical validation and are more explanatory of interactive dynamics than are the simple roles from which they are derived.

MANAGEMENT DYAD:

The original research proposed to examine the relationships between superiors and subordinates as viewed through the Response to Power Model. This special set of relationships as defined by one superior, one subordinate, and one situation was recognized as the most basic element of management. The management dyad, composed of the superior and the subordinate, thus becomes the most basic unit of interpersonal interaction within an organization.

Every superordinate has as many management dyads as he has subordinates and superordinates. Each of these dyads are different and, hence, define slightly different behaviors. The assumption of value in consistency is probably misleading. A good manager can be neither consistent across

management dyads nor can he be consistent across different situations, and, hence, he must endeavor to develop equity and parity through the just usage of differential behavior.

The dyadic behavior between a superior and a subordinate can be further divided into the role intersections defined by the *Response to Power* and *Interpersonal Power Models*. These interactive traits represent abstractions and define behavior only as composites.

POWER TRANSACTIONS:

As Jacobs () has pointed out in his social exchange theory, the fabric of any relationship is the transaction of basic need fulfillment resulting from different need hierarchies held by the participants. The *Response to Power Model* suggests that the basic ingredients of the transactions of organizational life are power and obligation. Failure in past to differentiate power from obligation has led to many of the misconceptions and paradoxes in organizational essays and research. Until authority and leadership were completely separated from accountability and responsibility, the true nature of the formal and informal organizational processes are not clear. Power represents control over resources required for carrying out the task whereas obligation represents the task itself. Authority as formal power can evoke accountability as formal obligation, but it requires leadership which is psychological power to generate responsibility, which is psychological obligation. The definition of role intersections in terms of the transactions of power and obligation is a natural extension of the role designations. Thus, in the traditional management dyad, the authoritarian superordinate assigns obligation while withholding power and in the avant garde relationship the permissive superordinate delegates power while

retaining obligation. Thus, role relationships define the social exchange between organizational members in power transaction terms.

TRANSACTIONAL ANALYSIS:

Another example of the convergence of diverse theories and concepts is exemplified by the compatibility between Sweney's RPM model and the *Transactional Analysis Model* suggested by Berne and his disciples. The role relationships established by the RPM model can be translated directly into ego state terms. The authoritarian represents the punitive parent, while the permissive is the indulgent parent. In each case, these tend to generate child roles in the other member of the management dyad. The rebel can be considered the spoiled child while the ingratiation typifies the dependent child. Since both kinds of behavior might be the consequence of either kinds of roles, the *Role Reaction Model* might also apply. The value of the equalitarian-critic relationship is its capacity to evoke adult roles from opposing members of the dyad.

THRESHOLD FOR EVOKING BEHAVIOR:

The new *Motivation Recruitment Model* suggests a construct new to organizational theory. The threshold for evoking behavior is that level of motivation necessary for converting motivation into action. It can be generalized as occupying a fairly uniform level over various activities based upon personal and situational factors. The level of this determines how much motivation is enough and to a large degree explains why some individuals require motivation at dysfunctional levels to carry out goal directed behavior while others respond with action to very low motivational levels.

A variable threshold for evoking behavior also explains the ambiguities and paradoxical nature of the term motivation. What many savants in the

area of motivational behavior have been calling a motivative climate probably correlates to establishing factors which will reduce the threshold for evoking behavior in organization members. This construct also can be identified with the resistance to behavior and the integrated motivation discussed by Cattell et al () in the *Motivational Analysis Test*.

THRESHOLD FOR CONSIDERATION:

Just as there is a threshold for converting motivation into action, there is the logical need for a lower limit of motivation below which behaviors are not considered as viable options. The distinction between consideration and actual implementation provides an intermediate zone where extrinsic considerations become important.

The threshold for consideration determines the lower bound for brainstorming activities and also the basis for tolerance of acceptable but unchosen acts.

ORGANIZATIONAL STRUCTURE ANALYSIS:

The original *Response to Power Measure Handbook* made an attempt to diagram the interactional effects of various superordinate-subordinate role combinations as they might appear in three-man chains within a hierarchical organization. Each of these *power plots* became dramatic illustrations of emergent behaviors and the dynamics which brought them about. One of these *power plots* is illustrated in Figure 6 with its narrative description of the dynamics and behavior.

Whereas the power plots are descriptive of the relationships, they are cumbersome to use and do not lend themselves to any expression of degree nor do they incorporate the recognition of simultaneity of a large number of relationships. Since every superordinate and subordinate expresses all

roles to some degree, there are present simultaneously all of the possible combinations but to varying degrees. The *Organizational Structure Analysis* was developed to make it possible to view the interaction of and three contiguous levels of management within the larger chain of command. The components are composites of three interpersonal power relationships.

THE FLEXIBILITY PROFILE:

The *Flexibility Profile* describes the major combinations involving either equalitarian or critic roles. With the center representing the complete flexibility presented by a complete absence of the manipulative roles associated with rigidity and conflict. In most cases, the middle man is spotlighted by the relationship because he is frequently at variance with other parts of the organization. The *Flexibility Profile* yields structural components which are less dramatic in their consequences but which are probably in a state of evolution. They do lend themselves to power plots which indicate pressures toward change.

RIGIDITY PROFILE:

The *Rigidity Profile* represents those role combinations characterized by manipulation or dependence upon the use of extrinsic reward and punishments. The term "rigidity" refers to the fact that they tend to get locked in because of the positive feedback aspects of the system. By concentrating on only the more dramatic roles, the patterns which emerge are stereotypical and easy to identify. This profile allows for calculation of degree as well as recognizing the simultaneous presence of all the patterns to some degree. It is often helpful to augment the use of the *Organizational Structure Analysis* with power plots of the more salient patterns.

NEW TESTS AND SURVEYS

The tests to measure the *Response to Power Model* had already been developed by the principle investigator prior to the onset of the research. This decreased the amount of time necessary to test hypotheses and to provide feedback material to the participating units and higher headquarters. A number of the other task forces, however, started their research from a lower base level, and, hence, needed to develop both conceptual frameworks and the instruments to measure them. Over the five-year period, a large number of instruments were developed to measure specific concepts and to test special hypotheses. Since these tests were financed by the Air Force Office of Scientific Research, their ownership resides with the Defense Department and the United States Government. To facilitate their use by both the public and private sectors, these instruments are available from the Center for Human Appraisal for application and use where needed. The authors reserve copyrights for use in other than governmental purposes. The instruments in their copyrighted form appear in the appendix to this document and may be used for governmental purposes by asking special permission from the authors.

SUPERIOR-SUBORDINATE EVALUATION TEST (SSET):

This instrument was developed by Sweney and Marsteller to measure a superordinate's role as it relates to a particular subordinate. This instrument became important for measuring flexibility of management style as it applied to the changes in his role with various subordinates. It also became a measure of adaptability as reflected by the correlation of this instrument with specific subordinate roles played by the subordinates. Thus, flexibility for each of the three superordinates' roles was measured by the range of variation of the use of that role. Adaptability became a function

of the degree of correlation between a particular role and its counterpart in the subordinate.

Possibly because of the similarity in format or perhaps because of its very applied function, the roles from this measure correlated very highly with those obtained from the *Supervise Ability Scale*. Thus, rather appropriately, the results on this test seem to measure role pressure and are related to focal circumstances rather than generalized values.

ROLE REACTION TEST:

This instrument was developed by Sweney and Fiechtner to validate the *Role Reaction Model*, and consists of 96 questions, answered on a True, Question Mark, or False format. The instrument measures ten dimensions, including equalitarian, critic, authoritarian-interactive, authoritarian-counteractive, permissive-interactive, permissive-counteractive, rebel-interactive, rebel-counteractive, ingratiator-interactive, and ingratiator-counteractive. This format closely resembles the RPM; in fact, the items for the critic and equalitarian scales were selected from that instrument. It was, therefore, assumed that this scale would measure generalized value systems and, therefore, role preference behavior. High correlations were found between this instrument and the RPM, and sufficient saturations were ultimately achieved through item refinement for it to be published in a self-scoring format. It is currently available for purchase at cost through the Center for Human Appraisal.

SUPERIOR-SUBORDINATE REACTION TEST:

This instrument was developed in two basic forms. One for use among subordinates and one for use with superordinates. Both of these forms had similar formats involving 16 questions with 5 different role response options.

Thus, the superordinate form measures the likelihood of responding to a particular subordinate with either an equalitarian, authoritarian-interactive, authoritarian-counteractive, a permissive-interactive, or a permissive-counteractive response. After three revisions, this instrument became sufficiently consistent to be acceptable for research purposes.

The subordinate form measures the five subordinate role categories from the *Role Reaction Model*. These five scales are; critic-cooperator, rebel-counteractive, rebel-interactive, ingratiator-counteractive, and ingratiator-interactive. The subject is expected to respond to the questions as they apply to his current superordinate and, hence, the scales correlate very highly with those on the *Responsibility Index*.

SUBORDINATE BEHAVIOR RATING:

With the *Role Reaction Model* came the necessity to attribute more complex roles to subordinate behavior. Thus, the SBR had to be replaced with an instrument for measuring five rather than three subordinate roles. The superordinate is asked to fill out a weighting sheet for each of his subordinates and to attribute to them the motivation for their various actions. The inferences required on this instrument are surprisingly consistent and reflect the likelihood that this attribution process has become a continuous activity and certainly precedes the testing occasion. This test measures the same five subordinate roles as measured by the other instruments within this battery. These scales correlate extremely highly with self acknowledged superordinate scales and, hence, reflect the superordinate's own management reaction to any particular subordinate.

SUPERORDINATE'S PURPOSE RATING:

Since many of the problems in management relationships evolve out of misattribution of motivation, this scale emphasizes the speculative nature

of making inferences concerning purpose. The subordinate is asked to infer his superordinate's purposes when behaving in certain ways. Thus, the five superordinate roles posited by the *Role Reaction Model* are measured for any one superordinate by each of his subordinates. High correlations between these ratings and subordinate's avowed role behavior indicate the intensity of these perceptions upon the formulation of subordinate behavior. It can be considered that these scales are validated by the internally consistent responses.

JOB DIMENSION SURVEY:

This instrument was developed by Dr. Belt and Mr. Swenson to assess the degree of satisfaction of Air Force Personnel in relation to their jobs and their work environment. This instrument in its revised form defines six homogeneous factors and correlates highly with other stress indicators.

The repeated use of this measure confirms findings by Herzberg and others that the job itself is a major source of satisfaction and the highest correlate with reenlistment decisions.

COMMUNICATIONS DIARY I:

This instrument was developed by Dr. James Campbell and Gene Voth to ascertain the division of an individual's time into the various communication modalities. It provided a system for time sampling and for recording the amount of time spent in reading, listening, speaking, and writing. This was further subdivided into whether the purpose was informational or inquisitive. The results from this instrument showed very significant differences in communication patterns at various hierarchical levels within the organization. Captains and Colonels spent a great deal more time reading and writing than did other officers. Similar disproportionalities were found in the enlisted ranks, emphasizing distinct changes in function, accompanying

various rank achievements.

COMMUNICATION DIARY II :

This instrument pursued the same purpose as *Diary I*, but utilized a completely different format. In this case, the diary presented a decision tree by which the subject was to make successive differentiations and assign the proportion of time spent at each juncture. Thus, the subject would determine what percentage of 100 percent he spent in input activities and output activities. Of the percentage attributed to input, he would then determine the percentage of time spent reading and the percentage of time spent listening. He was asked to further reduce each of these categories into the percentage of time receiving information and the percentage of time receiving questions. The percentage of time spent in output activities was further differentiated into speaking and writing, and finally into whether he was outputting information or asking questions. This extremely simple format was as reliable as the more complex one and provided the respondent with immediate feedback concerning his own activities. This tended to decrease the displeasure with participation and communicated some of the purposes and orientations of the research group to the respondent population.

COMMUNICATION DIARY III:

This instrument was developed by Ambrose Vaughn to measure the same basic categories. By changing the format and reducing each differentiation to two portions of 100percent, it was possible to obtain the exact percentages through multiplication. This yielded higher correlations than previous methods and seemed easier for the respondent.

TECHNICAL REPORTS

The technical reports developed by this project cover a wide band of topics and methodologies. This corresponds with the goal to demonstrate the adaptability of various models and designs to explain the complex dynamics associated with retention and quality of life. The lag between model development and the availability of confirming or disconfirming data delayed the publication of many of these reports. A list of these follows with authors, dates of completion, and contract in effect when finished.

List of Technical Reports

- "A Career Attitude Survey of Officers Serving on Titan and Minuteman Missile Crews" TR #108. Gerald S. Parrott. AFOSR 2001
- "An Analysis of Informal Power", TR # 101. Arthur B. Sweney and William Swenty. March, 1973. AFOSR 2001.
- "An Integrative Factor Analysis of Leadership Measures and Theories", Arthur B. Sweney, Leslie A. Flechtner, and Robert J. Samores. AFOSR 2001.
- "Career Development: Missile Officers' Perceptions and Opportunities", Michael P. Weitzel and John A. Belt. May, 1975. AFOSR 2001.
- "Communication Channel Utilization: An Examination of One of the Superordinate-Subordinate Relationships", Ambrose Vaughn. May, 1974, AFOSR 2001.
- "Human Resource Accounting", John Charles Eugene Voth. June, 1975. AFOSR 2001.
- "Interpersonal Power Relationships: As Defined by Superior-Subordinate Intersections", Arthur B. Sweney. AFOSR 2001.
- "Measurement of Job Satisfaction", Thomas G. Swenson, John A. Belt, and Arthur B. Sweney. Jan. 1975. AFOSR 2001.
- "Notes Toward a Theory of Communication and Social Change", James H. Campbell. Sept. 1971 AFOSR 2001.
- "Periodic Factors Involving Reenlistment Decisions: Measured by Social Indicators", Arthur B. Sweney and V. Ann Tubbs.
- "Personality and Superordinate/Subordinate Role Behavior. Leslie A. Flechtner and Arthur B. Sweney. May, 1975 AFOSR 2001.
- "Projective Measures of Interpersonal Relationships and Attitudes Toward the Air Force", Arthur B. Sweney, Gary L. Hughes, Leslie A. Flechtner. AFOSR 2001.

- "Relationships of Attitude Factors to the Career Decision of First Term Military Members", Gary L. Hughes and Arthur B. Sweney. Oct. 1973. AFOSR 2001.
- "Strategies for Conducting Mission Oriented Research in Military Organizations", Arthur B. Sweney. April, 1972. AFOSR 2001.
- "Subordinate Role Flexibility as a Function of Role Preference, Pressure, and Perception of Subordinates", Arthur B. Sweney and James F. Young. Nov, 1972. AFOSR 2001.
- "Systematic Bias in Perceptions of Superiors in Missile Combat Crews", Frank G. Zauner. May, 1975. AFOSR 2001.
- "The Air Force Wife: Her Knowledge of, and Attitudes Toward the Air Force:", John A. Belt and Arthur B. Sweney. AFOSR 2001.
- "The Measurements of Job Stress on an Operational Unit of the Military", Nazaire C. LeBlanc. March, 1977. AFOSR 2907 C.
- "The Relationship of Satisfiers-Dissatisfiers in a Military Unit to Re-enlistment", John A. Belt and Gerald S. Parrott. Sept., 1972. AFOSR 2001.
- "The Role Reaction Model: and Some Confirming Evidence", Arthur B. Sweney and Leslie A. Fiechtner. May, 1976. AFOSR 2001.