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"Top Management and Management Science:

An exploratory study in 15
federal civilian agencies"

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The life of operations research and management science ("OR/MS") groups both in U. S. business and in Federal civilian agencies, is characterized by continuing, if attenuating, volatility. (9,18,20) Advocates of OR/MS (here broadly defined so as to include systems analysis, advanced multivariate analysis, and the quantitative analysis and evaluation aspects of PPBS) have been concerned with improving its success in organizational contexts. Among their frequent recommendations toward this end is that the OR/MS staff must be given, or should somehow obtain, "Top Management Support." (10) In fact, this exhortation is common among the missionaries of new managerial technologies. (7,21) One may wonder if busy top managers have any time to devote to the support of in-house innovative functions, especially those which are based on sophisticated and esoteric technologies like operations research. An examination of several writings about high level management jobs yields suggestive, but conflicting hypotheses about the possibility of "Top Management Suport (TMS)."

Donald Stone proposes several central problems of top executive jobs. First, the top manager needs to "maximize his influence throughout his organization," as distinct from reliance on formal authority, second, he must overcome divisiveness in his organization; third, he must develop "a body of commonly shared ideas" in order to facilitate attention to the long-run. (16) To these Burns and Stalker might add the interpretation of the technical and market situation and the adaptation of both the working organization, and individual comitments to it, in appropriate ways. (2, p. 209) If these are the central problems of top managers, then it appears that they will have little use for OR/MS. Corson and Paul examine the jobs of high-level Federal civil servants, both program managers and staff personnel. They emphasize, through several capsule descriptions of the jobs of actual people, that the Federal executive is at the hub, not the apex, of a political process. He promotes the achievement of objectives and effects changes through negotiating, persuading, and developing a local consensus, at all times balancing the diverse interests of legislators, interest groups, subordinates, superiors, and peers. (5, ch. 2) There is no mention in these descriptions that program managers might use analytical aids to decision making; rather, the process is described as political and interpersonal. Other writers emphasize the pervasiveness of external relations not only in government (16) but also in hospitals (8, pp. 84-98) and in (Swedish) business. (3) The descriptions given of external relations activities do not suggest that OR/MS is relevant.

On the other hand, when time budgets have been developed for top management jobs, planning emerges as primary. Stieglitz finds that 275 top corporation managers both in the U.S. and abroad overwhelmingly feel that planning is their most important activity and that they devote the largest fraction of their time to it. (15) Corson finds the same for University presidents. (4) Planning involves the elaboration of and choice among alternatives, tasks for which its advocates claim OR/MS is appropriate. If top managers are very busy, then they may not have any extra time to devote to OR/MS even if their duties, such as planning, would predispose them in that direction. Stieglitz finds that the 275 corporation managers he surveyed average between 50 and 60 hours a week of work, for example, a figure also found by Sune Carlson with a much smaller sample of Swedish managing

directors. (15, p. 24; 3, p. 63) Corson and Paul find that among Federal program managers the work week is slightly lower, about 49 hours, and Stieglitz does find that corporation top managers, whatever their work week, manage to take fairly lengthy vacations. (15, p. 25) Time budget data suggests, then, that top managers may well have room in their schedules for attention to a new OR/MS staff. Some contradictory inferences may be drawn from Carlson's finding that top managers have almost no uninterrupted time. His sample averaged less than 10 minutes without a telephone call and several of his respondents saved serious reading and thinking for home. (3, Ch. 4)

At any rate, OR/MS is only one of several staff activities reporting to or interacting with a top manager. Stone argues that an executive must rely on his staff and that often by the time an issue gets to the executive the options are foreclosed. Before he can make changes in a staff's recommendations, another issue arises to capture his attention. Consequently, a top manager may be forced either to accept inferior staff reports, as Stone suggests, or, in the case of a new staff function in which his confidence is initially and understandably low, the manager may have to ignore its reports. (16) If the manager accepts inferior reports from a new OR/MS staff he may find himself in trouble and allow the OR/MS staff to develop a bad reputation. Seybold's study of personnel reports in large corporations suggests that Stone's analysis of the relations between top managers and staff groups is accurate. She finds top managers subject to an incredible variety of reports from this function alone. (11; 12)

Several factors mentioned as being specific to government organizations are noteworthy here. Stone suggests that government executives lack legal authority commensurate with their responsibilities and that they are subject to a high level of external influence. (17) He feels also that they are constrained by "rigidities in procedures attendent upon managing according to law and executive regulation." (16) Since these comments were made, it seems to me that there has been a convergence in public and private management situations such that these kinds of differences are disappearing. Their impact on the support of OR/MS is not immediately clear, in part because the factors tend to be contradictory (for example, there is both not enough and too much law). Stanley has documented the generally short terms of Federal political executives and his figures for tenure may be compared with those given by Stieglitz. (14, pp. 151 - 153; 15) While not noted by Stanley, short tenure is often assumed to induce a lack of attention to change or an inability to follow through with major change.* In either case, top management support for a new OR/MS activity would be more difficult in government than in business for this reason. Yet Stanley's data also show that the agencies with the most rapid turnover are Defense, State, and Commerce, hardly uniform in their use of OR/MS. We are left here, as throughout the discussion of top management jobs, with no clear anticipatory hypotheses about top management support of OR/MS. Given the unexplicated nature of the concept, "Top Management Support," this should not be surprising.

It is not sufficient to ask simply either managers or OR/MS analysts how strong is the TMS they are, respectively, giving or receiving. Bean has this statement thoroughly documented. (1) TMS is actually a rather complex concept involving several things: resource allocation, defense of the OR/MS staff, conflict resolution, and resource mobilization; understanding of OR/MS techniques and their applications; willingness to use or to help others use OR/MS recommendations; and, skill at pacing, guiding, and protecting the developing OR/MS staff. Vigorous and/or coercive support for the staff

* Many field respondents have made this observation.

at a time when it is not yet ready to produce workable recommendations may jeopardize the organizational careers of both the staff and its supportive manager. New staffs can have too many resources and too many conlicts resolved for them. It may on occasion be functional for a manager to decline to use a recommendation if the staff has not performed well in presenting it or if the approaches taken in the study have been overly complex and esoteric.

In other words, TMS has many components and the kind of support that helps the OR/MS staff develop toward a healthy self-sufficiency may involve "non-support" for tactical reasons. The notion that OR/MS staffs must always be given resources, always listened to, always helped in conflicts is a reflection of a rather simplistic, missionary commitment to OR/MS and an abdication of managerial responsibility for the development in subordinates of the ability to retain healthy autonomy in a situation of mutual and multiple dependence.

If we are to understand Top Management Support and its relation to the development of an OR/MS staff, we first need a better, more discriminating understanding of TMS itself. TMS must be disaggregated into more workable dimensions which can, in turn, be used in testable propositions. A preliminary disaggregation of TMS is into <u>attitudes</u>, <u>actions</u>, and <u>communications</u>. We want to know, how do top managers feel about OR/MS and their OR/MS staffs in particular? What actions might a top manager take regarding an OR/MS staff -- is it likely that a manager will, in fact, intervene in a conflict or help the OR/MS staff hire a particular analyst? What are the patterns of communication between the manager and the staff -- who initiates the communications, are they written or oral, formal or informal, etc.? Before one can interpret specific top management actions as "support," one needs to know what kinds of actions are likely to be forthcoming. It will do no good to test an hypothesis relating a specific action of a top manager to the success of the OR/MS staff if in the field it is learned that the action almost never occurs. Consequently, the first objective of the fieldwork was to discover and to <u>dimension</u> the relations between top managers and OR/MS activities. Secondly, it was hoped that there might be some insight gained into the relations among the three aspects of top management support, attitudes, actions, and communications. A final objective was to attempt some preliminary examination of the relations between some of these top management variables and the "success" of the OR/MS staffs.

The research investigation was directed at "dimensioning" the concept of Top Management Support. In this first analysis of the data, attention has been directed at the three questions just given. The analysis is a beginning and not an end and in later papers the data will be reanalyzed in an attempt to do a more thorough job of answering these questions.

General Characteristics of the Empirical Study.

The study involved interviews with 16 top managers in 15 federal civilian agencies. (In one agency both the present and former Deputy director were interviewed.) The directors of 16 agencies were contacted by letters; the letters were followed by telephone calls to arrange specific appointments. In most cases, the executive had already instructed his secretary to arrange an appointment at a convenient time with him or with a high-ranking subordinate he had already designated. I was unable to complete an interview in only one of the 16 agencies, and I do not feel that I was being evaded there.

Rather, the agency was involved in Congressional hearings, the top management was new to its jobs, and many top positions were vacant at the time. My request for an interview, therefore, came at an inopportune time. Of the 16 top managers interviewed, 11 were either agency directors or deputy directors. The other five were assistant directors for either administration or for planning.* All but two of the sixteen had direct line authority over the OR/MS staff (s) in their agency. In each of the fifteen agencies there was one or more OR/MS staffs currently operating. In all agencies we had performed interviews with members of the most important OR/MS staff and often had contacts with other extant OR/MS staffs as well. These interviewed had been going on, in some cases, for over three years, and all the agencies were in our sample of 35 agencies which has been the basis for much other research. The interviews with OR/MS analysts served to supplement the information obtained in the top management interviews.**

The interviews were conducted in August of 1969; in one case, the respondent was interrupted early in the interview by pressing business and asked if he could complete the interview alone and return it by mail. As the questionaire had not been designed with the instructions necessary for self-administration, I made a few modifications in the instrument before sending it to him; however, none of these were in matters of substance.

The interview instrument included mainly two kinds of questions, fixed response and "critical event" probes. (6) The following kinds of information were obtained: data on past experiences with OR/MS; attitudes towards OR/MS and the contribution it could make to various kinds of decisions, both in general and as it was practiced by the OR/MS staffs in the agency; written and verbal reporting relationships between the OR/MS staff and the manager, including probes on the specific consequences of these reports for the manager's behavior toward the OR/MS activity; presentations by the OR/MS staff to the manager or which the respondent attended, and the manager's evaluation of those experiences; evaluations of the importance, responsiveness, and organizational position of the OR/MS staff; respondent's preferred style of management for the OR/MS staff; respondent's interventions in conflicts involving the OR/MS staff; existence of rules governing size and/or scope of OR/MS projects requiring top management approval; various specific actions which the manager may or may not have ever taken with respect to the OR/MS staff, such as approving reimbursement for conference attendance or assistance in hiring a desired operations researcher, etc. Much of the data is difficult to reduce to a form amenable to tabular presentation and has as its main value to the expansion of the author's understanding as a prelude to further investigation. In a later paper, he will, however, use this data as a basis for a more narrative discussion of TMS.

Both the respondents and their agencies were characterized by great diversity. This matter will be discussed at length later in a section devoted to "problems of external validity".

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* In federal agencies there is, generally, a director who is politically appointed, a deputy director, less often politically appointed, who is the "No. 2 man", and several staff and line assistant directors who are usually career civil servants. By agency, I mean major line components of the Executive Departments, and independent offices. Examples are: The Office of Education (but not its Bureau of Higher Education) or the General Services Administration (but not its Federal Supply Service).

** By this I do not mean that I had any reason to doubt the truthfulness of the top managers; rather, the alternative data was available. Though the two sets of data allowed improved understanding of each other, there were no important contradictions.

Presentation of the Data

Only some of the findings from the study will be discussed in this paper. These findings can be organized under three questions.

How Close are top managers to OR/MS groups?

Figure 1 presents data from several questionnaire items relevant to this question. Arranged in the rows are the codings of each of the 16 managers on the seven questions whose general subjects provide the column headings. The last column is the sum of the number of plus's in each row (for each manager). The questionnaire items represented in the columns are of two types, measures of the closeness of the top manager to the OR/MS staff and measures of the degree to which the manager uses OR/MS recommendations. The first five columns are of the former type, and the last two are of the latter. A "++" indicates a high score, a "+" indicates a medium score, and a "-" indicates a low score for the respondent on the particular questionnaire item. These items are more than simple questions: all except the items for the fifth column involve "critical event" questioning, and the item represented in the fifth column is a list of 26 actions which the manager could have taken toward the OR/MS staff.

Figure 1. CLOSENESS AND USE

	5. Formal Regular Reports	6. Formal Irregular Reports	8. Verbal Reports	9c. Written Project Reports	21. Action List	7. Formal Presentations	9. Other Decision Influence	Total "+'s"
Manager A.	-	+	-	-	-	-	-	1
B.	++	+	++	+	++	+	++	11
C.	++	-	++	+	+	+	+	8
D.	-	-	-	+	n.a.	++	++	5
E.	++	+	+	-	+	++	-	7
F.	-	++	++	++	++	++	+	11
G.	+	++	-	++	++	++	++	11
H.	-	-	+	-	+	-	-	2
I.	+	-	++	++	n.a.	++	+	8
J.	-	++	+	++	++	++	++	11
K.	-	-	++	++	++	+	-	7
L.	-	+	+	n.a.	++	-	-	4
M.	-	-	+	-	-	-	-	1

Figure 1. Continued

	5. Formal Regular Reports	6. Formal Irregular Reports	8. Verbal Reports	9c. Written Project Reports	21. Action List	7. Formal Presentations	9. Other Decision Influence	Total "+'s"
Manager N.	++	++	+	++	++	++	-	11
O.	-	-	+	-	-	+	=	2
P.	-	-		-	-	-	-	0

Two approaches can be taken to explicating the data in Figure 1. First, what do the "+'s", etc., mean in reality? Let us take Mr. E. as an example. Mr. E. is the Assistant Director of a large Washington agency. Under him is a PPBS staff which does highly regarded analytical work. Mr. E. (for column one, Formal Regular Reports) receives biweekly, from both the OR/MS staff and from line division directors, formal written reports which regularly contain 4 to 5 different types of information about the OR/MS staff. He claims to read "most" (rather than "some" or "all") of these reports, and he originated all of them. Others receiving a "++" in this column reported similar levels of activity. A "+" indicates that the manager receives reports less frequently, perhaps monthly, with only 1 or 2 kinds of information , and from fewer organizational units. A "-" indicates little or no relationship through formal written reports,

Mr. E. also receives occasional progress reports from his OR/MS staff on specific projects, but these are not his major source of information about the staff. Other, receiving "++'s", receive informal written reports like Mr. E. receives formal ones, and some people receive almost none of these ("-"). In the third column, Mr. E. receives verbal reports about the OR/MS staff biweekly or more often from the line division directors; these reports have influenced him favorably toward the present staff. Others may have a more structured system of verbal briefings on a weekly or more frequent basis involving the OR/MS staff and other organizational units ("++"), and some managers use this channel little if at all ("-"). Mr. E. receives all the Written Project Reports of the OR/MS staff and reads only "some" rather than "most" or "all". He, therefore, gets a "-" on this column; a "+" would require him to read "most" and a "++" would require him to read "all". Of the 26 items on the Action List, Mr. E. has taken 7. On this column, the data organized itself rather neatly into three categories, and the middle range encompasses Mr. E. The three groupings were 0 - 2; 5 - 10; and 11+.

These five columns can be combined to make a "closeness" score based on the number of "+'s" the respondent receives in them. The questionnaire items for these columns all index the amount of communications activity between the manager and the OR/MS staff. Further on in the discussion when a "closeness" score is used, however, it will be composed of only the first four columns. The correlation between the score based on four and the score based on 5 columns is nearly perfect.

The last two columns refer to questionnaire items indexing the respondents use of OR/MS. In the next to the last column, scores are assigned for the influence of formal presentations on the manager's decision making or on the decision making of other top managers in groups of which the respondent is a part. Mr. E. receives such decision-oriented presentations about twice a month on the average; the last two were judged beneficial to both the agency and to the respondent himself, and the OR/MS recommendations were adopted in part on both occasions. A "+" would indicate less frequent presentations or presentations with similar frequency but somewhat less effect, or possibly a bit less on both counts. The last column, "other decision influence" refers to occasions when the OR/MS staff has influenced decisions without making formal presentations. The coding here is similar to that for the previous column, and Mr. E. could recall no recent occasions for this item. Mr. E's total score of "+'s" equals 11, placing him with 4 other respondents.

The second way to get a feel for the meaning of the +'s and -'s is to consider how much time per week they imply. Making guesses about how long a presentation takes or how long it takes to read a report, I have arrived at what I hope are "ball park" time estimates to associate with the summary numbers in the last column. They are as follows: a summary score of 11 is equivalent to an average of about 4 hours a week directly devoted to the OR/MS staff by the top manager. A score of 7 is roughly equivalent to 2 hours of time. A score of two or less is roughly equivalent to zero. These are, in my opinion, conservative estimates. Thus, 5 of the 16 managers are spending practically no time on this activity.. Of the latter 5, all are in one or more of three categories: very new to the job; organizationally distant from the OR/MS activity; out of the line of command above the activity. For example, one agency head interviewed had only been on the job for six weeks; and, thus, had not had the time to establish the kinds of relationships with the OR/MS group which this questionnaire was designed to discover; at the same time, the OR/MS staff in his agency was 4 levels beneath him in the organizational hierarchy. In another agency, I interviewed the assistant director for research and the OR/MS was under the assistant director for administration. These five individuals will create problems in the data discussed later also, but the sample is small enough to preclude their elimination.

Top managers' attitudes

Figure 2, Figure 3 and Figure 4 give the results of some questionnaire items about the specific OR/MS group in the respondent's agency. Where the totals are greater than 16 it is because the respondent has given differential answers about different OR/MS activities in his agency. However, in forming scales and indices only the responses oriented toward the most important group in the agency were used.

The charts show that the respondents felt that the OR/MS activities were, in general, important and responsive and that the groups might be expanded in size. The top managers offer favorable evaluations of the OR/MS staffs. The items which are presented in figure 2, the bottom of figure 3, and figure 4 have been combined to form an "index of specific attitudes", an index of attitudes toward the specific OR/MS staff in the respondent's agency. Each of the three items yielded trichotomous ordinal data, and the index was composed by assigning to these ordinal categories a "0", "1", or "2" and then summing for the respondent across all three questions. The "index of specific attitudes" will be used below.

Figure 2. TOP MANAGERS SAY THAT THAT THEIR OR/MS GROUP IS

One of the most important staff
groups in this agency............................ 7

Equal in importance to many
other staff groups in this
agency.. 7

Less important than many other
Staff groups; of little importance........4

Figure 3. RESPONSIVENESS OF OR/MS GROUPS

	very	moderately	not very
to top management	18		
to the divisions	6	9	1
to the other staff	4	8	4

THE OR/MS GROUP IS RESPONSIVE

In just about the right way...... 8

In a way that could be improved.. 7

Not responsive..................... 0

DK: N.A........................... 4

Figure 4. THE OR/MS GROUPS SHOULD BE

Expanded............................... 9

Kept the same size.................... 7

Reduced or disbanded.................. 1

DK.................................... 2

Figure 5 presents the results of some questions about OR/MS in general. Again, the responses are generally favorable; in fact these responses are more favorable than were those just presented. These items yield an "index of general attitudes" toward the role of OR/MS in the respondent's agency, and the index is composed in the same manner as the one just discussed.

Figure 5. General Attitudes

	agree strongly	agree	disagree	disagree strongly
OR/MS cannot make significant improvements in the efficiency of this agency's operations.	1		3	12
OR/MS can make significant contributions to the decisions I make.	9	7		
OR/MS can help this agency more fully achieve its performance objectives	11	5		

The "use index", a measure of the frequency with which the respondent uses either individually or as a participant in a group decision the outputs of the OR/MS staff, is composed of the sum of the plus's in the last two columns of Figure 1 for that respondent. The "closeness index", a measure of the amount of communication and frequency of contact between the OR/MS group and the responding top manager, is composed in a similar manner from the first four columns in Figure 1, as has been discussed above (supra , pg.6).

Consequences of attitudes and orientations

Four indices have now been described: "closeness index", "use index", "index of specific attitudes", and "index of general attitudes". We shall now look at the relations among these indices.

The statistical technique chosen for relating the indices is Spearman's Rank Correlation Coefficient, r_s. It was chosen because of the nature of the data, particularly because of the availability of a formula that incorporated a correction for ties. (13)

Figure 6 shows the relation between the "closeness index" and both the "index of general attitudes" and the "index of specific attitudes". There is an almost significant (p = .06) relationship* between closeness and general attitudes; perhaps closeness occasions respect for the potential

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* The author is cognizant of formal requirements for the use of signifance tests and uses these tests here for illustrative purposes rather than for proof.

of OR/MS, and respect for the potential occasions closeness as well. On the other hand, there is little, though still positive, relation between close-ness and specific attitudes. In other words, a manager who is close to his OR/MS staff is more likely to have a high regard for OR/MS in general than for his OR/MS staff. There are several possible reasons for this finding that are consistent with the author's knowledge of the specific situations. First, some respondents are organizationally distant from high quality OR/MS staffs. Yet they have a high regard for these staffs and for OR/MS in general. Consequently, on a scatter diagram these respondents would appear at the extremes of the negative diagonal and have a distorting effect on the expected relationship. Also, several respondents are actively and closely involved in attempting to improve OR/MS staffs, and this, again, pushes the relations, particularly that between closeness and specific atti-tudes away from the normally expected direction.

Figure 6. WHAT IS THE RELATION BETWEEN "CLOSENESS" AND TOP MANAGERS' "ATTITUDES TOWARD OR/MS?"

General attitudes: $r_S = .40$ (weak relation, $p = .06$)

Specific attitudes: $r_S = .30$ (no relation)

More surprising are the relationships shown in Figure 7. There appears only a very weak positive relationship between the use of OR/MS and attitudes towards it. The r_S's here are both small. Again, with reference to specific attitudes, there were some managers who were new to their agency or distant from OR/MS groups, or both, and in any of these cases they still had a high regard for the groups. Several managers were regular users of OR/MS staffs which they had a low opinion of as OR/MS staffs, but which they found per-sonally useful; other managers remained skeptical about OR/MS even if they used their OR/MS staff regularly. In one case, an agency head was, when interviewed, severely critical of OR/MS even though he had started, protected, built, and used a widely respected OR/MS activity as his personal staff. Several things are suggested. First, attitudes and actions are not related necessarily in the superficially expected ways. Second, some managers are willing to use staffs which are not producing professional work in ways expected by the manager. A manager is willing to take inferior products if they are better than what he already has available. Third, respected OR/MS staffs need not work for top managers. Contrary to the usual argument, an OR/MS staff may prosper outside of the protection of top managers.

Figure 7. WHAT IS THE RELATION BETWEEN "USE OF OR/MS" AND
TOP MANAGERS' "ATTITUDES TOWARD OR/MS?"

General attitudes: $r_s = .29$ (no relation)

Specific attitudes: $r_s = .19$ (no relation)

These same arguments are evident in Figure 8. Here, the closeness and use indices are related to my own rankings of the quality of the OR/MS groups each respondent dealt with. These rankings are developed from the Program file of over 200 interviews, evaluations of knowledgeable Washington observers, and documents collected at the field sites. The criteria employed in the rankings include the impact of the group on the agency, the level of Or/MS technology employed by the group, and the organizational complexity of its projects. In general, the results are the same as indicated on Figure 7 except here I have used my own evaluations of the OR/MS groups rather than the respondent's evaluations.* The same possible explanation as before holds here, too. One additional explanation can be suggested. From examination of individual case histories or OR/MS groups it appears that a consequence of closeness to top managers for an OR/MS group may be the decline in the group's professionalism. The technical sophistication of the OR/MS work may decline and large scale projects may be neglected, both in favor of work which might be called "fire fighting". This work may be equally stimulating and important as it will involve the critical, unprogrammed crises of top management; and, the analytical mind of a management scientist may have much to contribute to these problems. However, the staff is then not doing OR/MS, and my rankings are based on evaluations of the staffs as OR/MS staffs. The suggestion that use of and closeness to an OR/MS staff by top management may lead to the "deprofessionalizing" of the OR/MS function is not easily inferred from the writings of those who believe that top management support is essential to the success of the OR/MS function. In essence, what is being said here is that the data suggest that there can be "too much of a good thing."

Figure 8. WHAT IS THE RELATION BETWEEN "USE OF OR/MS
BY TOP MANAGERS" OR "CLOSENESS OF TOP
MANAGERS TO OR/MS" AND RANKINGS OF THE
OR/MS GROUPS?

Use of OR/MS: $r_s = .26$ (no relation)

Closeness to OR/MS: $r_s = .20$ (no relation)

* Recently completed interviews and questionnaires provide a first step toward a more objective and intersubjective ranking. (20) This data is still coming in and was not used here. No assumption is made here that the application of OR/MS is naturally "easier" in some types of agencies.

The closeness and use indices themselves are strongly related (figure 9) implying that if one is using an OR/MS staff, one must become close to it in the sense that "closeness" is used here. Also, the high correlation implies the reciprical relationship, that if one is close to the OR/MS staff, one is likely to be using it.

Figure 9. WHAT IS THE RELATION BETWEEN "CLOSENESS OF TOP MANAGERS TO OR/MS" AND "USE OF OR/MS BY TOP MANAGERS?"

Use -- closeness: r_S = .81 (very strong relations, $P < .01$)

Figure 10 relates the general and specific attitudes to my rank orderings of the OR/MS staffs. If these rankings are accurate, the data suggests that top managers in government are able to distinguish quality in OR/MS groups and that these same managers do not allow their general evaluations of OR/MS to be dominated by their immediate experiences with it. Confirming this interpretation of figure 10 is the fact that the correlation (r_S) between the indices of general and specific attitudes is +.08, or effectively no relation at all.

Figure 10. WHAT IS THE RELATION BETWEEN "ATTITUDES TOWARD OR/MS" AND THE RANKINGS OF THE OR/MS GROUPS?
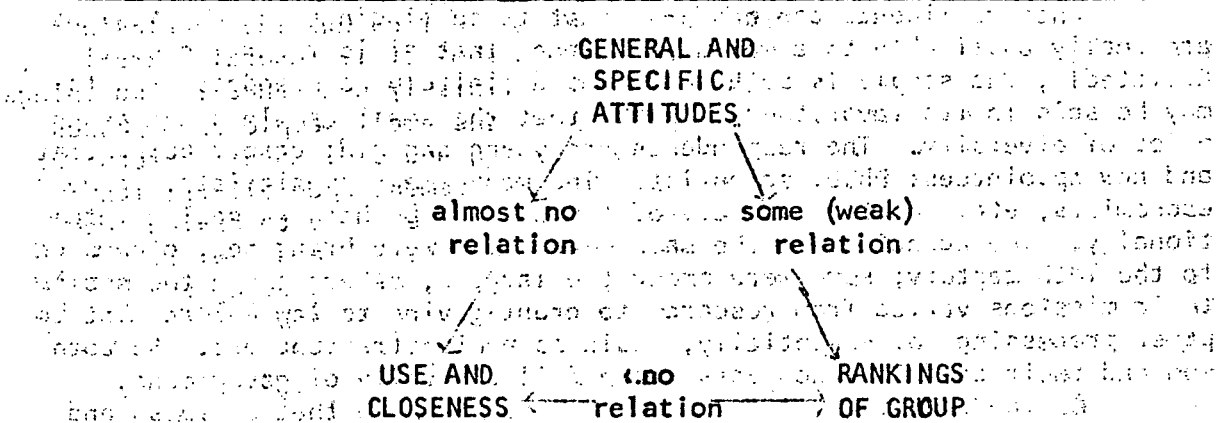
General attitudes: r_S = .29 (no relation)

Specific attitudes: r_S = .43 (strong relation, $p < .05$)

Conclusions

All the correlations are summarized in Figure 11. Several general conclusions can be drawn. First, it is apparent that OR/MS is very relevant to many of the top managers interviewed for this study. Although there have been extensive writings in which it is argued that this cannot be so (18), the empirical evidence contradicts these. If OR/MS has yet to impinge in a major and direct way on the most important and broad problems of domestic policy, it has in its very short life in government begun to play a role in decisions which are important to the agency directors who are making them. And, we should remember, their perception of what the significant decisions are may well be more accurate than a similar perception based on the daily newspapers.

Figure 11:   Summary

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                        GENERAL AND
                         SPECIFIC
                        ATTITUDES
                    /                \
            almost no              some (weak)
            relation                relation
                    \                /
             USE AND     no        RANKINGS
             CLOSENESS <--relation--> OF GROUP
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Second, top management attitudes and top management actions are not related in the most obvious ways. Favorable attitudes are not necessarily related to high levels of use, and unfavorable attitudes are likewise not necessarily related to low levels of use. Rather, I suspect (and the data needs to be re-analyzed with some deviant cases removed) that if the managers who were new to the job when interviewed, out of line responsibility for the OR/MS staff, or organizationally distant from the staff are removed from the sample, the remaining 11 managers will all evidence a consistantly strong degree of closeness and use regardless of their attitudes. If this is so, it reinforces my first conclusion.

Third, "Top management support" has been shown, I hope, to be a complex concept which needs much further explication. My position is that it ought to be discarded completely and more directly measureable phenomena used in its place for the near future.

Fourth, the consequences to top management's use of and closeness to an OR/MS group need not be the success of the group as a professional, innovation-producing, research-oriented unit. This, of all conclusions, is least apparent directly from the top management interviews; when these interviews are combined with those done in the corresponding OR/MS staffs, the conclusion seems hard to evade, however.

Several things may be inferred from this analysis and proposed for further research. One is that, after discussing the general problems with other members of the research program, it appears possible that government top managers are more at ease in dealing with professionals than their counterparts in business. This should not be too debatable at the outset, for so many government agencies are dominated by professionals (such as Public Health Service, Geological Survey, Agricultural Research Service, and many others). It may also be that government top managers are less demanding of OR/MS staffs than their business counterparts have been. Perhaps the problems which are forced upon the government executive are, in fact, less amenable to quantification, even though, as will be argued below, the total package of problems facing an executive in public life may not be much different than those faced by the private executive. (The differences appear in which ones get delegated).

External Validity

What confidence can one have that these findings and conclusions are really applicable to a world wider than that of 16 federal executives? Admittedly, the sample is both small and definitely non-random. Two things may be said in its favor,then. One is that the small sample encompasses a lot of diversity. The respondents are young and old; career bureaucrats and new appointees; Ph.D. scientist, line management specialists, lawyers, economists; etc. A wider variety of types would be hard to design intentionally. The agencies are the same way. Some were brand new, others dated to the 18th century; some were among the largest, others among the smallest; their missions varied from research to grant-giving to law enforcement to paper processing to, essentially, business administration; etc. So both the men and their agencies encompassed the full diversity of government.

At the same time, I think that it is arguable that business and government executive jobs are growing rapidly more alike. An analysis of writings about executive jobs in both environments over the last 20 years, plus a consideration of the social movements and changes of that period as they effect some commonly observed differences in the two types of jobs, convinces me that this is true. I have acted as if it were in my introductory section, where I review literature based on government, business, hospital, and educational administration in foreign as well as in American settings. If both this and the previous factor are relevant, than there should be a fair amount of generality to the major conclusions of this paper. Each of the questions raised here deserves further attention from organization theorists and students of management.

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