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ABSTRACT

Decision-making and the models of decision-making that people carry in their minds were assessed. Participants in a public policy decision involving early childhood education were mapped onto four frequently used models of decision making: the rational, the bureaucratic, organizational process (Allison, 1971) and the garbage can or organized anarchy model (Olsen, 1975). Participants were employed by higher education institutions and were evenly divided by sex. Decisions involved the classification of child development programs and courses in the California numerical coding system and articulation between schools within the state system. Each of the four models can be described in terms of 15 key concepts, which provided the content of the test presented to participants, who could associate their experience with one of the theoretical decision-making models by choosing statements that related to that model. Sixty Q-sort items were used to create four scores for each respondent, each of which represented the relative weight that the respondent attached to each of the four theoretical models. Participants had quite different impressions of what they were doing. While they all saw themselves as organizational actors, they divided equally over their rationalistic and political perceptions. Those who saw the situation as rational tended to be state employees, office of education workers and representatives of the university chancellor's office. Those who saw the situation as political tended to be campus-based program leaders who supported the growth of early child education programs, particularly the ones that they had initiated. Key concepts and Q-sort statements are appended. (SW)

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VARIABLE PERCEPTIONS OF DECISION:

An Operationalization of Four Models

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It is now relatively firmly established in the management literature that decisions can be perceived of as taking place according to different models of organizational functioning --bureaucratic, political, rational. Further, at least conceptually, we can find elements of different modes of thought in the same decision, as Graham Allison did in Essence of Decision (1971). A still open question, however, is to probe whether decision makers actually carried coherent models with them as they deliberated. The research summarized here maps the participants in a public policy decision involving early childhood education onto four frequently used models of decision-making.

In this study we created an assessment instrument using

Allison's three models--the Rational, the Bureaucratic Organizational Process, and the Political--and Cohen, March and Olsen's (1975), the Garbage Can or Organized Anarchy model.

The participants in our study had quite different impressions of what they were doing. While they all saw themselves as organizational actors, they divided sharply over their rationalistic and political perceptions. Those who saw the situation as rational tended to be state employees, office of eduation workers and representatives of the university chancellor's office. Those who saw the situation as political tended to be campus-based program leaders who supported the growth of early childhood education programs, particularly the ones that they, themselves had initiated.

Two decision events involving the same general topic were studied. One involved a Task Force formed by the California Community Colleges Chancellor's Office nad as its dominant concern the classificacion of child development programs and courses in the state's numerical coding system. Prior to this time child development had been variously classified under psychology, home economics, education, sociology, and behavioral science. The Chancellor's Office Task Force (COTF) decided on February 6, 1977, to recommend a new classification number for collecting data on child development courses. In one sense the change was simply technical, but the decision gained importance because it gave child development legitimate standing as a separate area of study, something that practitioners had long sought.

The second group focused upon the problem of

articulation--minimizing of waste and repetition when students move from one school to another within the state system. This problem was addressed by a group, established by the California State University and Colleges consortium (CSUC). On February 7, 1977, this Task Force concluded that it was feasible to create an external degree program of liberal studies courses which would lead to a credential in multiple subjects to be delivered through the various state college departments of continuing education.

The twenty-two individuals in the two groups were employed by higher education institutions. The groups were evenly divided by sex, eleven men and eleven women. Half represented community colleges; half the four-year colleges. Half were officials of the Community College Chancellor's Office staff, or the California State University and Colleges' Chancellor's Office staff; the others represented the field, faculty members from two or four year schools. There were eleven participants in the two-year Chancellor's Task Force (COTF), eleven in the four-year California State University and Colleges Task Force (CSUC). Because, as we will demonstrate later, there were no significant differences between the essential nature of the tasks or differences between the individuals on the basis of sex, work roles or other measures--the two groups were treated as one for the key statistical analysis reported here.

The Theoretical Models

What did the participants themselves have to say about the decision events? In order to find out the participants were asked whether what they did matched the elements of various decision

making models; in effect asking, "Which of these best reflects what happened in your group?".

I--Rational Actor Model. This study owes a great debt to the theoretical models of Allison (1971), who develops three of these analytical models. He suggests, first, that decision groups ordinarily assume that they operate rationally. In other words, they define common goals, select alternative means to reach those goals, weigh alternatives, assess risks, set priorities for actions, sequence tasks, and calculate probabilities for maximizing gain and minimizing losses. In the best of all possible worlds, the decisions which organizations make under this model are efficient and effective.

II--Organizational Process Model. Organizations do not act as unitary actors. Organizations, particularly large or complex organizations, must fragment tasks in order to allow specialists in smaller work groups to tackle pieces of problems. Specialists frequently have different backgrounds, and different ethos, different disciplines, and different goals. Organizations, for the sake of order and efficiency, have routines and standard operating procedures. They function as bureaucracies under the rule of rules (Blau, 1955, 1963). Regulations and routines function to promote stability, but create inflexibility in adapting to changes in their environment and become rigid. Innovation becomes difficult. Decision-making can be contentious and ponderous and implementation difficult (March and Simon, 1950).

III--Political Process Model. Large and complex organizations function as representatives of the interests of the

departments, divisions or agencies which are part of the whole bureacracy. Conflict is a necessary adjunct to the groups who live out the drama of decision events in organizations. As decisions are influenced by bureaucratic reality, so decisions are also influenced by the power struggle among dedicated and skillful players in the political game that is activated daily in all organizations, large and small (Lindblom, 1965, 1968).

IV--Garbage Can Model. The last model examined in this study represents a further refinement of the organizational and political models. March and his colleagues have developed a model which they call variously the "garbage can model of organizational choice" or the "organized anarchy model." In brief, some organizations are characterized by a lack of clear goals, by ambiguous objectives, by uncertain technology, by unclear paths to evaluation or feedback. The assessment of success of its endeavors is difficult to apprehend, so adaptation and change are problematic. Decision-makers are usually so diverse in character, temporary in tenure, random in attendance, that organizational decision-making appears starkly different than in the rational model. Stress situations influence these kinds of decision-making events. The stress of deadlines, the pressures of overload, the unexpected organizational slack, the conflict of disparate specialists who do not share common vocabularies and values all lead toward situations of ambiguity. Educational organizations, it is argued, are primary examples of organized anarchies.

Key Theoretical Concepts

Each of the four models can be described in terms of fifteen "key concepts," which provided the content of the test presented to participants in the study. Thus, these people, could associate their experience with one of the theoretical decision-making models by choosing statements that related to that model. The statements are distilled from a wide range of theoretical writing. Table I illustrates the organizing concepts of the four models.

Beginning with the popularity of Allison's book on the Cuban Missile crisis of 1962, scholars have been drawn to multiple explanations for decision-making. However, among the essential limitations in Allison's approach, capturing the perceived decision-making process is still somewhat a matter for assignment by the researcher. The use of Q-methodology represents an orderly way for the participants themselves to describe what they thought they did.

In addition, the Q-methodology allows a more accurate description of an implication in the multiple decision methods theory--namely that more than one theory was operating in a single decision, that participants were putting together their own picture of reality from the different theoretical perceptions, and not adhering to the bounds of any one theory. The theoretical models would then be "ideal types" in the Weberian sense rather than descriptions of reality.

Q-technique is a well-known, though controversial, methodology for the study of the behavior, opinion, judgment or

TABLE 1

Summary Outline of Models and Concepts

The Paradigms	Model I	Model II	Model III	Model IV
	Rational Choice	Organizational Process	Political-Conflict	Garbage Can/Organized Anarchy
	Shared goals Known options Clear technology Criteria for evaluation	Bureaucracy Limited rationality Communication Information overload	Personal goals Stakes and stands Power Action channels	Effects of time Personal persistence Fluid participation Loose coupling
Basic Unit of Analysis	Action of group as choice	Organization as fragmented parts	Conflict of subgroups over choices/resources	Unknowns, values, time constraints, organizational environments
Organizing Concepts	Common goals Human purposiveness Decision as rational activity of monolithic actor Methodology of rational choice Alternative generation Handling of abundant information Weighting of benefits	Bounded rationality Factored problems Standard operating procedures Programs and repertoires Problem directed search Parochial perceptions Priorities Sequential attention to goals	Players in game Perceptions Ambition Deadlines Power Rules of the game Decision access Bargaining skill Misperception Misexpectation	Parochial perceptions Anxiety about post-decisional regret Personal values bias Unclear technology Environmental pressure Short tenure of office Uneven energy allocation Organizational load or slack

TABLE 1 --Continued

Summary Outline of Models and Concepts

The Paradigms	Model I	Model II	Model III	Model IV
	Coordination and control Maximin-minimax Computer assisted prediction Optimal search	Satisficing		Persistence
Dominant Influence Pattern	Organizational choice based upon thorough study of goals and objectives, cost analysis and long-range planning	Organizational choice based upon fragmented information, bureaucracy, rigidity, standard operating procedures, resistance to change and turf guarding	Organizational choice based upon power, trading of influence, coalitions, bargaining, conflict, pressure, and gamesmanship	Organizational choice based upon randomness, persistence, irreducible values, fluid participation, timing of events, accident, non-decision

Variation of G. Allison, Essence of Decision, p. 256

responses of small groups or even single individuals. It has been used extensively in psychoanalytic theory and research, and is most notably exemplified by the Minnesota Multi-Phasic Inventory. The technique involves sorting decks of cards called Q-sorts. It focuses upon the correlations among the responses of different individuals to the sorts. The methodology presents a technique for examining preferences and rank ordering a large number of items.

Clearly, the first task in the Q-technique is the selection of content for the cards used in the Q-sort. These cards, in fact, contain the theory that is being tested in the study. In this study, the theory of the four decision models was constructed into the cards.

Before proceeding any further, it is important to note that there are two types of Q-studies. Most published Q-studies have used unstructured Q-sorts. An alternative approach is called the structured Q-sort.

> To structure a Q-sort is virtually to build a 'theory' into it. Instead of constructing instruments to measure the characteristics of individuals, we construct them to embody or epitomize 'theories.' In the use of Q as Stephenson sees it, individuals as such are not tested; theoretical propositions are tested. Naturally individuals must do the Q-sorting. And Q-sorts can, of course, be used to measure characteristics of individuals. But the basic rationale of Q, as Stephenson sees it, is that we have individuals sort the cards not so much to test the individuals as to test 'theories' that have been built into the cards. (Kerlinger, 1973, p. 588)

In this study 100 statements were selected from concepts relating to Models I, II, III, and IV. Statements were written to represent as closely as possible each key concept.

Each statement was:

1. a single idea;
2. non-jargon expression; which is of
3. roughly equal significance to the model.

Once the statements were composed, their validity and reliability was tested by five expert judges familiar with organizational literature, who were asked to sort them into the four models. Those cards which received less than 80 percent agreement were discarded. This collection of cards (Appendix A) was presented to the Task Force participants. They were instructed to sort the cards according to the relative influence of the concept or the card upon the outcome of the working group of which that person was a member. The cards were placed in one of 11 piles. The number of cards in each pile and the values assigned to each approximated a normal curve. The central position indicated a neutral affect whereas the two tails of the value scale indicated stronger reaction to the statement. A score of ten indicated a strong reaction that the statement had high influence, while a score of zero indicated a strong reaction that the card had low influence. The assemption in the forced sort is that most people would have more statements with neutral affect.

After the subjects had completed the card sort, a tape recorded interview was held regarding the decision events, the theory, the outcome of the decisions, and the respondent's impression of the Q-technique. The sorting task took about thirty minutes, as did the post-sort interview.

Varying Perceptions of Decision

The sixty Q-sort items were used to create four scores for each respondent. Each score represented the relative weight that respondent attached to each of the four theoretical models. Mean scores were calculated for both groups and the two groups combined as reported in Table 2.

Overall, Models II (Organizational Process) and III (Political Activity) received the most support; Model IV (Organized Anarchy) received the least support. Tests of differences between groups on their responses to each of the models showed no statistically significant differences. In addition, there were no gender differences in the way people look at decision-making and there were no differences attributable to type of education, or employment status. None of the expected differences emerged. However, visual inspection of a correlation matrix produced by comparing the item scores for each individual showed apparent clustering: that is, groups of high correlations between respondents and groups of low correlations, but relatively few correlations at about the .5 level. This initial inspection implied that a factor analysis procedure of the item scores would lead to a clustering of people around similar response patterns.

Instead of factoring the items in the Q-sort, the matrix was rotated and the persons clustered. The respondents were clustered into the best possible groups represented by their patterns in scoring the items. The Q-factor analysis found a two-factor solution which accounts for 47.9 percent of the cumulative variance. Factor 1 accounts for 34.2 percent of the

TABLE 2

Test of Mean Differences Between COTF and CSUC Groups on Model Ratings

	Total		COTF (n=11)		CSUC (n=11)		t-test	
	$\bar{X}$	s	$\bar{X}$	s	$\bar{X}$	s	df	t-value
Model I	72.8	18.9	69.6	21.4	76.0	16.5	20	-0.78ns
Model II	83.0	8.1	85.1	8.8	80.8	7.1	20	1.25ns
Model III	83.3	8.4	82.8	10.3	83.8	6.4	20	-0.27ns
Model IV	61.1	10.2	62.3	9.5	59.9	11.2	20	0.53ns

TABLE 3

Eigenvalues and Percent of Variance Accounted for by Decision Perception Type Factors

Factor	Eigen-value	% of Variance	Cumulative % Variance
1	7.52	34.2	34.2
2	3.01	13.7	47.9

variance between the responses on the model scores. Factor 2 accounts for an additional 13.7 percent. Table 3 shows the Eigenvalues (the factor loadings which account for the variation in scores) and the percent contribution of each factor to the total variance (dispersion) of the individuals.

The term Decision Perception Type (DPT) was created to describe three clusters of people with similar views. These groups were created according to the loading (association) of each participant on the two factors chosen. DPT 1 includes eleven respondents who favor Factor 1. DPT 2 includes five respondents who score high on Factor 2. DPT 3 contains five individuals who share elements equally between Factors 1 and 2. One person stands outside all clusters. (See Table 4).

Table 5 shows that individuals' treatment of Models I (Rationality) and IV (Ambiguity) are crucial in distinguishing DPT 1 fro 2. Model II (Organizational Process) and Model III (Political Behavior) share equally top ranking by all DPT groups. On Model I, DPT 1 has a mean score of 83.4, which is significantly different from DPT 2 ($p = .01$). DPT 1 and DPT 3 are not statistically different. On Model IV, the same pattern holds: DPT 1's mean score differs from DPT 2 ($p = .01$), but DPT 1 is not significantly different from DPT 3. DPT 3 falls in between DPT 1 and 2 on every model. We can conclude from this test that given our sample there are people who rate Rational (Model 1) notions as paramount in their perception of decision-making, while their counterparts DPT 2, rate the Garbage Can (Model IV) as operating more significantly in decision-making than rational notions. Figure 1 shows the three

TABLE 4

Factor Loadings Derived from Rotated Factor Matrix

	ID	Factor 1	Factor 2	Estimated Communality
	3	.68	.17	.48
	4	.68	.04	.46
Group 1	6	.73	.11	.55
	7	.62	.23	.44
	8	.79	.16	.66
	15	.77	.03	.60
	16	.61	.02	.37
	18	.65	.20	.46
	19	.66	.15	.46
	21	.73	.16	.56
	22	.67	.23	.51
	1	.05	.73	.54
	5	.07	.59	.35
Group 2	10	.21	.56	.36
	11	.05	.73	.54
	13	.05	.65	.43
	2	.48	.48	.46
	9	.60	.44	.56
Group 3	12	.49	.37	.38
	14	.38	.44	.34
	17	.37	.51	.39
Outlier	20	.58	.53	.61

TABLE 5

Tests of Differences Between Decision Perception Types on Decision Model Scores

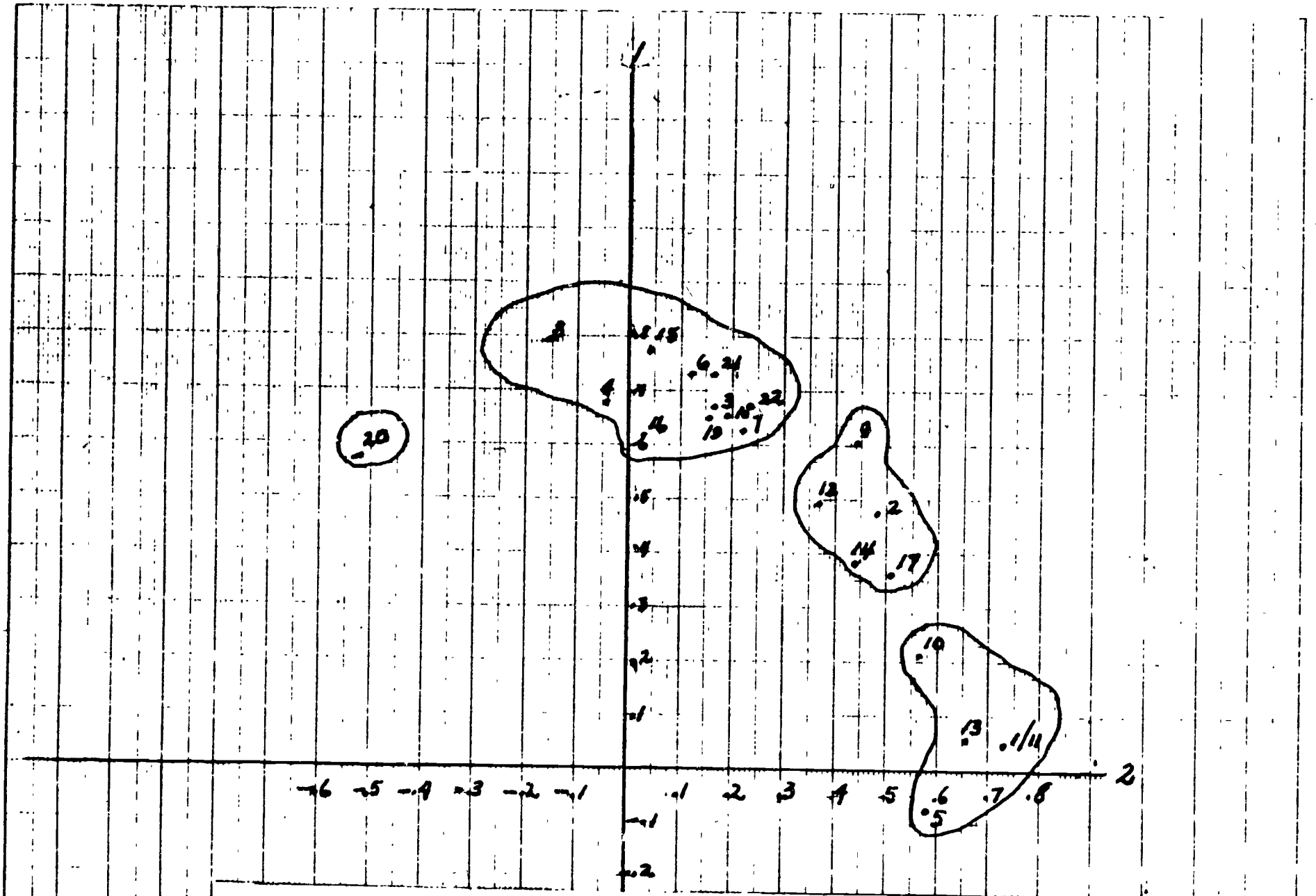
	Mean Scores				t-test		
Model	DPT 1	DPT 2	DPT 3	df	ss Between Models	ss Within Models	F-Value
I	83.4^{a}	52.8^{b}	$70.2^{a,b}$	2,19	3269.1	4248.2	7.31**
II	80.3^{a}	88.6^{a}	83.2^{a}	2,19	238.7	1154.2	1.96
III	80.8^{a}	87.4^{a}	84.5^{a}	2,19	160.4	1314.3	1.16
IV	55.5^{a}	71.2^{b}	$62.8^{a,b}$	2,19	867.4	1316.4	6.26**

ss = sum of squares

** = p = .01

Note: differences between row means sharing common superscripts are not statistically significant

DPT Group 3 includes I.D. 20



Decision Perception Typology Persons Clusters
Figure 1

groups graphically.

Additional insight into the nature of the Decision Perception Groups comes from a review of the Q-sort items that discriminated between the groups, and from their responses. While in the sorting procedure the respondents as a whole favored items from the Organizational and Political Process Models (II and III), their preferred decision mode expressed in the interviews was Rational (I). Departures from it were viewed as an unfortunate bow to an imperfect world: "If I had free choice, it would be rational...(but) you don't have a choice to make rational decisions all the time."

Nonetheless, a significant subgroup of 11 people discriminated themselves from the others by way of their rational perceptions of what went on during the task force deliberations. These clustered in DPT group 1, and generally favored items from Model I in their card sort. (Model scores and DPT classifications for each of the participants are shown in Table 6.) They distinguished themselves from the other group by seeing purpose in what they were doing, making assumptions about rationality, clear goals and the ability to examine alternatives and weigh consequences and benefits. (Table 7 contains the statistically significant sort items along with the mean scores on a 0 to 10 scale and their F values.)

A profile of the individuals in DPT 1 can fairly be said to reveal the academic establishment. Three of the members were state university system professors in disciplines other than child development, four were representatives of the chancellors' office

TABLE 6

Listing of Model Scores by

Case Number

ID	DPT.	Model 1	Model 2	Model 3	Model 4
1	2	53	91	91	4
2	3	57	90	85	66
3	1	76	72	96	58
4	1	90	87	71	52
5	2	55	91	87	67
6	1	76	89	79	56
7	1	70	81	84	65
8	1	107	70	80	43
9	3	62	84	86	68
10	2	40	98	85	77
11	2	53	88	91	68
12	3	63	90	88	59
13	2	63	78	83	76
14	3	63	80	91	72
15	1	97	77	78	48
16	1	88	87	59	66
17	3	59	87	86	68
18	1	72	87	77	64
19	1	80	68	88	64
20	out	117	68	71	44
21	1	86	78	86	48
22	1	75	87	91	47
mean	-	72.82	82.95	83.32	61.09

TABLE 7

Mean Item Scores by
Decision Perception Type

Item	Mean Scores Decision Perception Type 1	2	3	t-test[a] ss between	ss within	F-Value
Model I: Rational Actor						
1 Purposiveness	7.2	3.4	6.3	49.65	54.17	8.71**
2 Assumed Rationality	8.9	5.0	5.8	67.53	63.74	10.06***
4 Decisions the Result of Reasoning	6.4	3.6	4.5	30.62	33.24	8.75**
5 Alternatives Examined	5.9	3.0	5.3	29.58	46.24	6.08**
6 Clear, Common Goals	6.4	1.2	5.2	92.41	82.18	10.68***
7 Consequences and Benefits Weighed	6.9	4.2	5.5	26.61	41.21	6.13**
Model II: Organizational Process						
18 Power is Fractionated	3.8	6.8	5.2	31.32	37.27	7.98**
19 Buffered Responsibility	3.9	6.8	3.0	43.06	73.71	5.55*
27 Lack of Authority	3.9	5.8	6.2	24.41	56.54	4.10*
28 Self Protection	4.3	6.6	5.0	18.62	43.38	4.08*
Model III: Organizational Politics						
36 Winning Mattered	1.6	6.4	2.5	79.71	37.24	20.33***
42 Compromise Used to Gain Support	6.3	4.0	5.7	17.80	39.52	4.28*
Model IV:						
46 Group Created to Prevent Decisions	1.3	6.6	2.0	101.39	47.38	20.33***
47 Fear and Uncertainty Important	3.4	7.6	4.3	59.83	57.26	9.93**
56 Intolerance for Ambiguity	2.3	5.4	2.7	35.10	20.72	16.09***
57 Decision Avoidance	1.0	3.8	2.0	27.02	40.80	6.29**

[a] df = 2,19
*p = .05
**p = .01
***p = .001

and one represented the state agency that licensed teachers.

These persons contrasted sharply with those who clustered in DPT 2. They were distinguished by a mixture of items from Models 2, 3, and 4, which in combination earn them the label competitive cynics, or perhaps competitive realists. They believed strongly that there was something to be won in the task force deliberations, and this significantly discriminated them from the members in the other groups (see Table 7, item 36). They were also distinguished by their belief that responsibility is layered and power so divided that action was difficult. Interestingly, DPT 2 members incorporated into their belief system some of the central tenets of the organized anarchy theorists, and in their interviews these people perceived both the possibilities and the frustrations of operating in a world that did not always respond to rational choice. The members of DPT 2 perceived that their group was formed in part to prevent decisions from being made, and that fear, uncertainty and ambiguity were important aspects in the decision process in which they partook. As one of the five members of this group noted in the interview:

> Well, I think most problems are normally cast in an institutional context, so that problems are defined by people as seen from the particular context--a concrete context. But looking at real problems, you've got to get below those kinds of definitions because those kinds of definitions are geared to...structural restraints.

This group tended to be composed of outsiders to the academic world, neither regular faculty members nor administrators, these persons had titles such as "coordinator" or "director". Three of the five ran categorically funded "soft money" projects, and in a sense they were

old political hands. They were also the activists who had been instrumental in attempting to start both task force groups. From their perspective there was a clear distribution of authority involved in the decisions to how to classify child development programs and how to count credits toward degrees. In part because they saw this so clearly, they tended to be cynical about the beneficiaries of the decisions even while they participated in the process.

The third Decision Perception Type group fell between the other two in their choices (see Figure I). They tended to strongly favor items from Models II and III and to be indifferent about choices of items from the other two models. All but one of them were lower level campus administrators--deans, directors or department chairs.

Finally, there was an outlier (individual ID 20) who fit no group easily. He was a hyperrationalist who both in his choice of cards and his normative beliefs expressed in the interview clearly thought that there was but one way to think about problems. He was a chancellor's office employee, a director of facilities planning, who occasionally risked the wrath of the other members and his employers to emphasize how problems should be solved.

Conclusion

What, then, do these 22 people tell us about decision-making and the models of decision-making that people carry in their minds? We are led to a caution and three conclusions. The caution concerns the generalizability of this work. The decision

events researched here were largely routine, but carried out in an extraorganizational setting. None of the participants was the direct employee of the other, although there were some status hierarchy and authority hierarchy relations implied. The setting was, however, not strictly deliberative either. We strongly suspect that had the setting been different, the perceptions would have been different, too.

The first conclusion is essentially an affirmation of the multiple decision mode research and writing begun over a decade ago. Yes, people do have different ideas about what they are doing. Moreover, they can carry quite different perceptions of what a decision is about into the process of coming to a conclusion, and they are still able to seize upon a decision.

Second, people appear able to easily integrate aspects of different decision models in their minds as they operate. The theoretical models serve well as ideal types. Decision participants are able to merge them with perhaps more facility than academics.

Third, the Q-sort instrument poses interesting possibilities for organizational research. The instrument created here is quite crude, and the system has its drawbacks, but still it does appear as a means of directly capturing the perceptions of decision participants. One of the limitations is the forced normality in the distribution of the cards in the sort. This requirement may have the effect of creating differences where none exist in fact. Experiments in relaxing the assumption would prove interesting.

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APPENDIX A

Key Concepts and the Q-Sort Statements

Key Concept	Personal Identifying Statement
Model I--Rational Actor Model:	
1. Assumption of human purposiveness**	We assumed human purposiveness to be central to our decision-making.
2. Asumption of decision-making as a rational activity.***	Our group functioned under the premise that decision-making is a rational activity.
3. Actors as monoliths	As a decision-making group, we acted as an individual decision-maker would act.
4. Reasoning skill**	Our decision outcome resulted from our reasoning skill.
5. Examination of alternatives**	As decision-makers, we carefully examined all alternatives.
6. Common goals***	Our group had common goals and clarity of purpose.
7. Weighing of benefits and consequences**	We carefully weighed the benefits and ultimate consequences of each alternative in making decisions.
8. Priority for order and logic	As a decision-making group, we shared a high priority for order and logic.
9. Long-range planning	As a decision-making group, our actions were part of a long-range plan.

APPENDIX A--Continued

	Key Concept	Personal Identifying Statement
10.	Access to and cost of information	As a decision-making group, no expense was spared in terms of time and money in order to obtain the maximum information and alternatives.
11.	Information search	We were fully satisfied that our search for alternatives was optimal.
12.	Careful planning	We were careful and thorough in making decisions relative to thoughtful plans.
13.	Maximin/minimax	As a group, we gave careful consideration to maximizing the probability of our gains and minimizing the probability of our losses.
14.	Ends-means analysis	We used techniques of means-ends analysis such as PERT (Program Evaluation and Review Techniques), MBO (Management by Objectives), CPM (Critical Path Method), etc.
15.	Simulation	Influential to our decision-making were techniques of computer simulation that calculate the statistical probabilities of outcomes, events or options.
	Model II--Organizational (Bureaucratic) Process:	
16.	Limited resources	Faced with limited resources of time and money, we were limited in information and options.
17.	Factored problems	Because we were faced with the magnitude of our problem or choice, we divided the responsibility among sub-groups.

APPENDIX A--Continued

Key Concept	Personal Identifying Statement
18. Fractionated power**	Because we divided problems, we created a situation of split power and the resultant conflict influenced our decision-making.
19. Uncertainty and risk layers of protective authority*	As decision-makers, we attempted to buffer the responsibility of making choices with many layers of authority.
20. Institutionalized planning	Our current decision-making efforts seemed to ignore the organization's long-range plans.
21. Incremental change	We sought a way for change to take place in small stages, as large and significant change is almost impossible in large organizations.
22. Slippage between decision and implementation	We made a decision but it is not likely to be implemented.
23. Rules and rigidity	Our ranges of choices was narrow and change seemed impossibly slow due to the rigidity of rules and regulations governing the organization.
24. Bureaucratic roles	Our decision was influenced by the roles people played
25. Standard operating procedures	We were hampered in our decision task by the existence of cumbersome standard operating procedures.
26. Routinized repertoires of action	We had a limited range of choices due to the established repertoires of the organization.

APPENDIX A--Continued

Key Concept	Personal Identifying Statement
27. Chain of command*	As decision-makers, we lacked the necessary authority to do much; everybody seemed to be passing the buck onward.
28. Parochial perspective*	Individuals in our group were so self-protective, they lacked the perspective to perceive the best interests of the total group.
29. Turf-guarding	Our decision-making was influenced by the degree of turf-guarding that went on.
30. Differing theoretical bases	The decision task was very difficult, as we all came from different disciplines so did not share the same theoretical base.
Model III--Organizational Politics Model:	
31. Conflict equals politics	As a decision-making group we accepted the fact that confict was inevitable and that therefore our task would be defined as political.
32. Elements of politics: compromise and negotiation	Compromise and negotiation were a part of our decision-making procedures.
33. Conflict of ends vs. means	As decision-makers, we differed over the ways to meet shared goals.
34. Game strategies	Like poker or chess, our decision-making involved bluffing, trading-off, bargaining.

APPENDIX A--Continued

Key Concept	Personal Identifying Statement
35. Maintenance of power; zero-sum games	It seemed important to play only in games where winning was probable in order to maintain our influence or power.
36. Importance of winning***	To our group winning in a power game was the only thing that mattered.
37. Competition	As decision-makers, we had competitive interests which influenced events.
38. Coalition building	Coalition building influenced the decision process.
39. Relative weight of personal power or influence	The decision was influenced by certain individuals' skill in the use of power.
40. Skill in the uses of persuasion	The power to persuade was crucial to our decision.
41. Vested interests	The question of "who benefits" influenced our decision-making.
42. Log rolling*	We compromised on lesser issues in order to gain support for major issues.
43. Timing	Strategic timing was a major influence on our decision.
44. Bargaining and trade-offs	Our decision emerged from a bargaining process.
45. Decision style	Our decision was influenced by the decision style adopted by the group which was consensus.
Model IV--Organized Anarchy:	
46. Artifactual model***	Our decision group was created to prevent decisions or solutions.

APPENDIX A--Continued

Key Concept	Personal Identifying Statement
47. Role of emotion**	Fear and uncertainty played an important role in our group.
48. Unclear goals	We really didn't know what we wanted.
49. Unclear preferences	We really didn't even know what our preferences were.
50. Energy allocation	The amount of time that some participants could devote to the task influenced our decision.
51. Time allocation	The differences in energy and enthusiasm of participants influenced our decision.
52. Fluid participation	Participants kept changing, coming and going; this influenced our decision.
53. Unclear technology	If we don't know how to do what we do, how could we know what to choose? The technology of education is unclear.
54. Organized anarchies	Like "an organized anarchy" our group was loosely structured; this influenced the decision-making.
55. Ambiguous goals	Our goals were so vague they didn't mean anything. This influenced our decision-making.
56. Intolerance for ambiguity***	The decision was made just to end the discomfort of ambiguity.
57. Decision avoidance**	We tried anything to avoid the responsibility of coming to a decision.
58. Fuzzy lines of authority	Authority and leadership were unclear, making decision-making difficult.

APPENDIX A--Continued

Key Concept	Personal Identifying Statement
59. Timing of problems	The timing of problems is important; leftover solutions from past problems became attached to our decision.
60. Post-decisional regret	We were so worried that our decision would be regretted that it influenced our decision.

Predictive of DPT

*p = .05
**p = .01
***p = .001