VALUE KNOWLEDGE MANAGEMENT
Process Structuring for Multi-party Conflict

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Keywords: Knowledge Management, Values, Judgment Analysis, Resource Allocation, Analytical Mediation.

Abstract: Value knowledge management (VKM) comprises the process structuring required to make individual and/or group values explicit in a manner so that such initially tacit knowledge appropriately informs decision making. This paper presents a case in which VKM is used for structuring an organizational preparation process for a new and substantial initiative. Fundamental group conflicts exist with respect to this initiative and, more immediately, with respect to the extent of preparation envisioned. The relative importance of two key values is at issue: increasing human capital and reducing project costs. The case illustrates a three-stage approach to VKM and demonstrates how the articulation of group judgment policies, the development of a shared resource allocation model, and the application of analytical mediation can make a substantial contribution to organizational problem solving or opportunity seeking.

1 INTRODUCTION

In the field of knowledge management (KM), the distinction between tacit and explicit knowledge has remained an important touchstone (Liyanage, Elhag, Ballal, & Li, 2009). While explicit knowledge has been articulated, codified, and communicated already in some symbolic form, tacit knowledge, though perhaps equivalent in its coherence and correspondence (Hammond, 1996), remains as yet implicit and unexpressed. Tacit knowledge must be inferred by others over time as actions are observed. Both individuals and groups are viewed as possessing tacit knowledge; some have argued that organizations also can be considered to be repositories of tacit, as well as explicit, knowledge (Easterby-Smith & Lyles, 2003).

One of the most important domains of tacit knowledge pertains to values, that is, personal values, group values, and organizational values. According to Scott (1965), a value is a standard which influences—in full or in part—commitment to preferred actions and goals (i.e., what ought to be accomplished or what ought to be achieved). When one value alone fully explains commitment to an action or goal (e.g., the standard for preserving all human life or for speaking only the truth), this value is absolute. In most situations, however, two or more relative or competing values differentially influence such commitments.

Surprisingly, value knowledge is not identified as a type (e.g., declarative, procedural, causal, conditional, relational, or pragmatic) in knowledge taxonomies (Alavi & Leidner, 2001). Value knowledge management (VKM), a proposed domain for KM introduced in the present paper, is absolutely central to any explication of organizational problem solving or opportunity seeking. VKM comprises the process structuring required to make individual and/or group values explicit in a manner so that such initially tacit knowledge appropriately informs decision making and provides necessary retraceability and sufficient accountability. Without VKM, an organization is unable to maintain its intentional course because it lacks capacity either to articulate or to exercise its priorities.

Values cannot be articulated meaningfully in the abstract, of course, and any general statement of their relative importance is useless (Keeney, 1992, 147-148). Therefore, the foundation of VKM is the assumption that the most informative expression of individual and group values always will be in reference to specific and well-understood situations. The management of value knowledge must originate in particular circumstances that can elicit statements of preference. Since values are the standards which influence commitment to preferred actions and

Rohrbaugh J. and Hassan S. (2009).
VALUE KNOWLEDGE MANAGEMENT - Process Structuring for Multi-party Conflict.
In *Proceedings of the International Conference on Knowledge Management and Information Sharing*, pages 63-68

goals, the clearest insight into their relative importance—if trade-offs are induced at all—emerges where they are "put to the test."

The present paper presents a case in which VKM is used to structure an organizational preparation process for a new and substantial initiative. Fundamental group conflicts exist with respect to this initiative and, more immediately, with respect to the extent of preparation envisioned. The relative importance of two key values is at issue: increasing human capital and reducing project costs. In turn, these two values influence the level of individual and group commitment to five preferred organizational actions: process planning, process scope, process staffing, trainer skill, and suitability of facilities. In this case, VKM entails a sequence of three stages: the articulation of group judgment policies, the development of a shared resource allocation model, and the application of analytical mediation.

2 GROUP JUDGMENT POLICIES

One of the most well-tested and applied methods for measuring individual and group commitment to preferred actions and goals is through the use of judgment analysis (Cooksey, 1996; Rohrbaugh, 2001). Sometimes identified as "policy capturing," judgment analysis typically involves the presentation of a series of realistic cases, scenarios, or vignettes that systematically differ on several well-specified dimensions. By regressing numerical judgments that are expressed in response to variations in these dimensions, an explicit model of the judgment process can be inferred that algebraically represents—and can predict—the assessments made in a judgment process.

In the present case, five dimensions of organizational action are contemplated: process planning, process scope, process staffing, trainer skill, and suitability of facilities. The judgment to be made is the extent to which these dimensions influence increases in human capital of relevance to the new and substantial initiative.[i] Three groups—teams from human resources management (HRM), budget and finance (B&F), and new project coordination (NPC)—with long-standing conflicts of value within the organization independently meet in a brief session to articulate their respective judgment policies.

The initial series of 35 hypothetical scenarios presented to each group for consideration is illustrated by three cases shown in Figure 1; a full description of the method is beyond the scope of this paper (see Reagan-Cirincione, 1994). The relative weights and function forms that the three groups produce for the five dimensions of organizational action are displayed in Figure 2. Note, for example, that HRM places the greatest relative weight on planning, which is least important to B&F. Both function forms for the dimension of facilities are positive for HRM and NPC; B&F, however, generates a negative function form. Even in this first stage of VKM, these three sets of relative weights and function forms make explicit the nature of the organizational conflict that exists between the three groups.

Case 1
Planning Level 3: one-day meeting on-site
Scope Level 2: 25 participants; 6 one-day sessions
Staffing Level 3: full-time manager
Trainer Level 4: regional contractor
Facilities Level 1: in-house space

Case 2
Planning Level 5: two-day meeting off-site
Scope Level 3: 15 participants; 4 two-day sessions
Staffing Level 2: half-time manager
Trainer Level 4: regional contractor
Facilities Level 3: conference center

Case 3
Planning Level 3: one-day meeting on-site
Scope Level 1: 15 participants; 6 one-day sessions
Staffing Level 1: half-time senior clerical
Trainer Level 2: in-house staff with consultant
Facilities Level 2: in-house space with catering

Figure 1: Examples of three scenarios presented for group judgments.

3 SHARED RESOURCE ALLOCATION MODEL

A resource allocation model identifies the full set of activities, projects, or programs vying for support, as well as the multiple levels at which investments could be made in each. A full description of the method for constructing resource allocation models with groups is also beyond the scope of this paper (see, for example, Adelman, 1984; Carper & Bresnick, 1989; Phillips, 1985, Schuman & Rohrbaugh, 1991, Vari & Vecsenyi, 1992). The

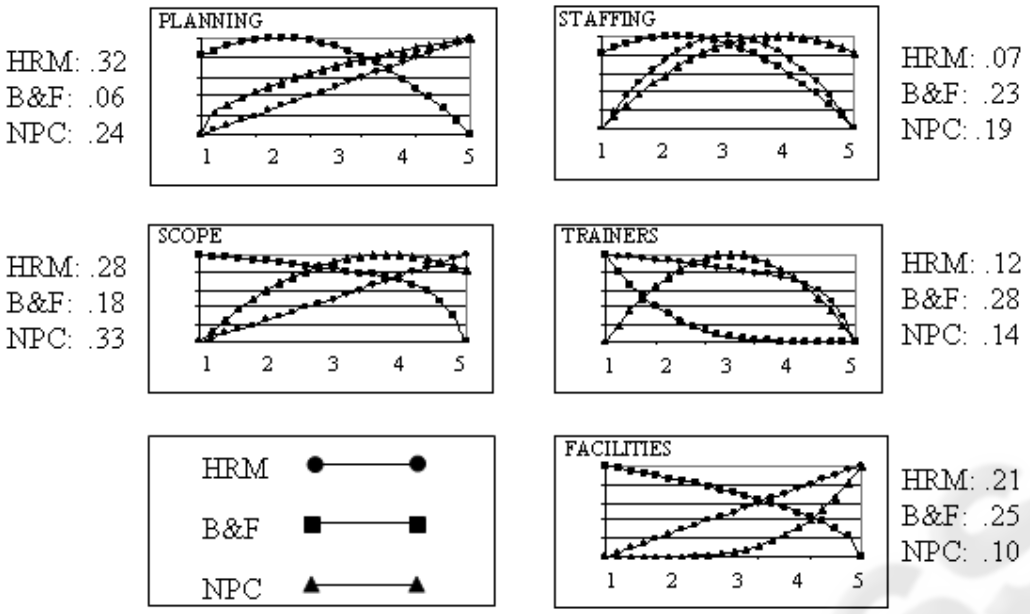

Figure 2: Relative weights and function forms for three groups.

	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
	$0	$4	$8	$12	$23
PLANNING	agenda pts. at meetings	half a day on-site	one day on-site	p.m. & a.m off-site	two days off-site
	$30	$50	$75	$115	$185
SCOPE	6 1-day 1 group/15	6 1-day 1 group/25	4 2-day 2 groups/15	4 2-day 3 groups/15	4 3-day 2 groups/25
	$30	$45	$90	$120	$150
STAFFING	half-time sr. clerical	half-time manager	full-time manager	full-time mgr half-time clr	full-time mgr full-time clr
	$55	$75	$105	$130	$160
TRAINERS	in-house staffing	in-house w/ consultant	university team	regional contractor	national contractor
	$0	$6	$10	$21	$32
FACILITIES	in-house classroom	in-house w/ breaks	conference center	conf. ctr. w/ breaks	conf. ctr. w/ breaks & lunch

Figure 3: Joint resource allocation structure with costs (in thousands).

shared resource allocation model for the present case is presented in Figure 3. Five levels of resource investments are being considered for each organizational action; levels are listed from left to right across the rows in order of their increasing costs as the B&F team estimates.[ii]

The five "Level 1" allocations for planning, scope, staffing, trainers, and facilities would cost $115,000 altogether; the five "Level 5" allocations would cost an additional $435,000 or $550,000 altogether. From the entirely lowest to the entirely highest resource allocations, there are 3,125 possible combinations of investment levels (i.e., 5 x 5 x 5 x 5 x 5). If all three groups shared the absolute value of reducing project costs, there would be no conflict with respect to the extent of preparation envisioned. Planning would be conducted as agenda points for currently scheduled meetings. The scope of preparation would involve

one group of participants in a series of six one-day sessions. Staffing would be provided by the commitment of a senior clerical employee on half-time assignment. Trainers would be selected from current staff members. One of the regular meeting rooms in the central office would be reserved for instructional space; no food or beverages would be provided. These are all "Level 1" allocations that minimize project costs.

The introduction of a second and competing value—increasing human capital—leads to the trade-offs being considered here. In an organizational preparation process for a new and substantial initiative, enhancement of human capital is achieved with the expenditure of ever greater monetary amounts. The three teams from human resources management (HRM), budget and finance (B&F), and new project coordination (NPC) somewhat uniquely consider the relative importance of cost containment and human capital expansion. In this case, the application of VKM is critical to locating a specific proposal, expressed as one particular combination of investment levels out of the 3,125 possible, to which the three groups will agree and make a genuine commitment.

4 APPLICATION OF ANALYTICAL MEDIATION

Analytical mediation is a computer-supported process used in conflictual situations to identify potential settlements with high joint benefits (Mumpower, Schuman, & Zumbolo, 1988). Integer goal programming provides a means for readily identifying settlements that lie on or near the efficient frontier. The basic objective for the application of analytical mediation is not to prescribe a specific settlement but, rather, in the spirit of the single-negotiating text idea proposed by Raiffa (1982), to provide a concrete, externally authored proposal which the negotiating teams can criticize and use as a springboard for developing a settlement that might be considered as even more mutually satisfactory.

The use of analytical mediation for VKM in this case follows closely the method described by Mumpower and Rohrbaugh (1996) and extended to multi-party resource allocation by Darling, Mumpower, Rohrbaugh, and Vari (1999). As illustrated in Figure 4, all possible settlements are arrayed in the joint utility space for each pair of teams. If a pair of teams share a similar commitment to preferred actions and goals, the points that are plotted appear around the diagonal from the lower left

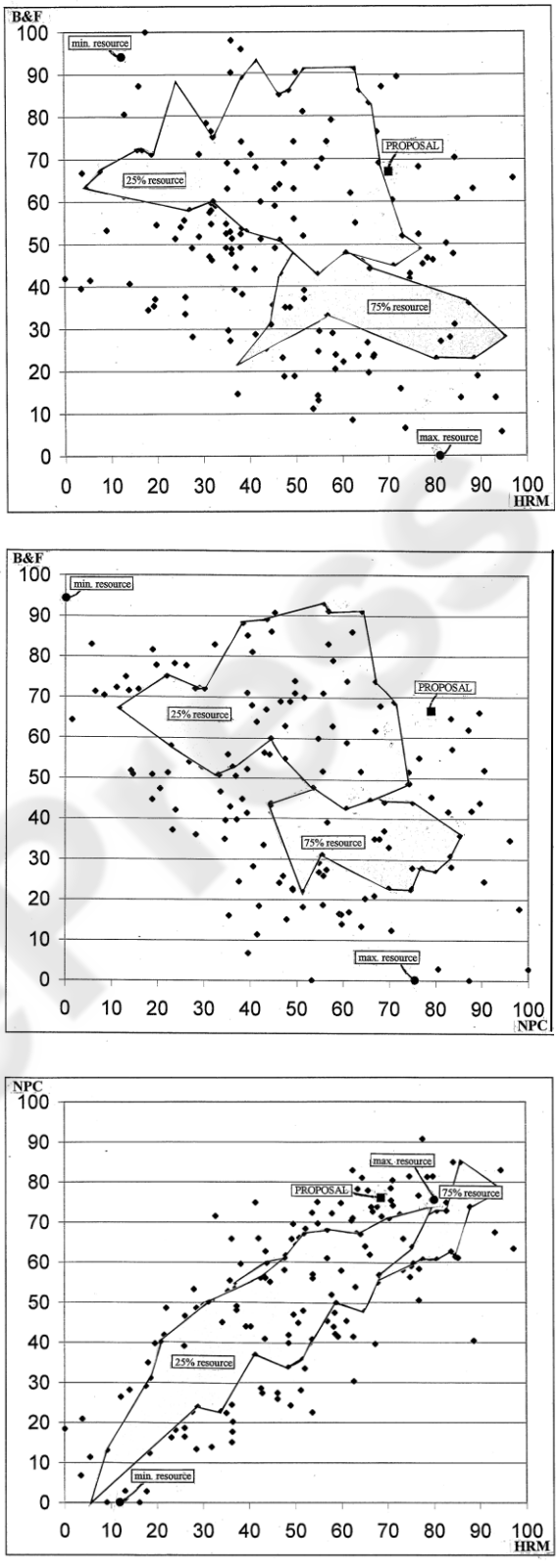

Figure 4: An illustration of analytical mediation.

to the upper right (as shown for HRM and NPC). If a pair of teams differ in their commitment to preferred actions and goals due to opposing values, the points that are plotted appear around the diagonal from the upper left to the lower right (as shown for B&F and HRM, also for B&F and NPC).

Highlighted in Figure 4 are two regions containing 1) all settlements carrying a cost that is 25% of the total increased cost from minimum to maximum; and 2) all settlements carrying a cost that is 75% of the total increased cost from minimum to maximum. Many more such regions could be defined. Also identified are the points of minimum cost (all "Level 1" allocations) and of maximum cost (all "Level 5" allocations). The degree of overlap in the two regions—clearly visible for all three pairs of teams—indicates that considerable joint utility can be achieved without incurring large costs. In other words, the organization does not need to expend upwards to 75% of the total increased cost for the three groups to agree and make a genuine commitment to a shared organization preparation process; in fact, increased cost reduces the utility of settlements for the B&F group.

One proposed settlement identified in Figure 4 stands out in these graphs:

Planning Level 4: afternoon and following morning meeting off-site ($12,000)

Scope Level 4: Three groups of 15 participants; four two-day sessions ($115,000)

Staffing Level 3: full-time manager ($90,000)

Trainer Level 2: in-house staff with consultant support ($75,000)

Facilities Level 2: in-house space with light food and beverages during breaks ($6,000)

At a total cost of under $300,000 (that is, about 40% of the total increased cost from minimum to maximum), this proposal provides between two-thirds and three-quarters of the total utility that would be gained by each group had their own "ideal" plan of action been adopted.[iii] On a utility scale from 0 to 100, this proposal provides the HRM group with 69, the B&F group with 67, and the NPC group with 77. Movement away from this proposal to other possible settlements appears to advantage one or two teams more greatly at the disadvantage of the other(s) but certainly is deserving of the groups' consideration.

5 DISCUSSION AND CONCLUSIONS

The present case—a decision about the allocation of resources to an organizational preparation process for a new and substantial initiative—offers a prime example of the importance of value knowledge management (VKM). Although value knowledge is an under-represented domain of study in the KM field, the effective articulation, codification, and communication of individual and group values remain highly consequential aspects of any organizational problem-solving or opportunity-seeking process. Since values, whether relative or absolute, are the standards which influence commitment to preferred actions and goals, an organization maintains its intentional course by acting in a value-coherent and value-correspondent manner (Hammond, 1996).

Many organizational conflicts have integrative potential, that is, where the nature of the problem permits solutions that are better than zero-sum for all parties (Walton & McKersie, 1968); in such situations, each party can gain reasonably well and not necessarily at the expense of the others. Of course, the nature of the favorable "solution space" as depicted in Figure 4 would not be known without the application of VKM. In fact, the relative values of the three teams—HRM, B&F, and NPC—that undergird the plotting of joint utilities would not have been evoked explicitly without the use of the judgment analysis method in the initial VKM stage.

Even in organizational circumstances in which a single team is called upon to allocate resources, the challenge is made difficult because of the number of activities, projects, or programs that request (or require) support. Furthermore, experienced professionals realize that resource allocations rarely should be simplified as dichotomous choices (i.e., "go or no-go" choices between full investment versus non-investment); intermediate levels of resource commitment almost always exist and should be considered. In the present resource allocation model with merely five organizational actions being considered at only five levels of investment, the total number of alternative combinations exceeds 3,000, a highly complex task that increases geometrically with more actions and/or more levels.

When resource allocation decisions are shared by multiple groups bringing their own respective values to the process, the complexity of the task is made even greater. VKM provides an extraordinarily valuable approach for process structuring in multi-party conflict. The present trade-off between two key values—increasing human capital and reducing project costs—is considered from the unique perspective of each of the three teams. At a total cost of under $300,000 (that is, about 40% of the total increased cost from minimum to maximum), the proposal described in this case provides between two-

thirds and three-quarters of the total utility that would be gained by each group had their own "ideal" plan of action been adopted. Arguably, without VKM substantial joint project gains and/or resource savings might be forfeited.

In conclusion, the importance of knowledge about individual and group values, as well as the management of such knowledge, should be an increasingly important domain of study within the KM field. This is especially true where the development of lateral relations and knowledge sharing across professional subgroups is of organizational interest (Rangachari, 2009; van der Spek, Kruizinga, & Kleijsen, 2009). The present case illustrates one approach to VKM and demonstrates how the articulation of group judgment policies, the development of a shared resource allocation model, and the application of analytical mediation make a substantial contribution to organizational problem solving or opportunity seeking. The further development of VKM and the possibility of more frequent VKM applications should follow.

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[i] Reductions in project costs are considered in the next section.

[ii] In cases where teams disagree on cost projections, additional meetings to achieve consensus may be required. The use of "sensitivity analyses" can support such meetings by identifying which differences have little or no consequence on outcomes.

[iii] For HRM, the ideal would be levels 5, 5, 3, 1, and 5, respectively, at a cost of $385,000. For B&F, the ideal would be levels 2, 1, 2, 1, and 1, respectively, at a cost of $134,000. For NPC, the ideal would be levels 5, 4, 4, 3, and 5, respectively, at a cost of $395,000. These levels can be identified directly from Figure 2 as the maximum points on each group's set of function forms.