THE GOVERNANCE OF TRANSITION PROCESSES IN AN ORGANIZATION: A COGNITIVE MAPPING APPROACH

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ABSTRACT

We hypothesize that successful management of transition processes implies a gradual decrease in the occurrence of severe organizational problems like social dilemma and pure competition problems. Cognitive mapping analysis of interview material from a reorganization in a Dutch bank supports the claim that problem severity decreases as organizational transitions unfold.

INTRODUCTION

A central issue in the literature on the management of organizational change is the discussion of the large variety of unforeseen problems that can occur during the change process, and how these problems could best be solved. This article sketches a theoretical framework for the identification of change problems and their consequences for different stakeholders in the organization, and proposes a structural method for the analysis of textual data. The method combines a cognitive mapping analysis with a social dilemma approach. The usefulness of the suggested approach is empirically illustrated with an analysis of the implementation problems that a Dutch bank had to face during a change process of three years.

THEORETICAL BACKGROUND

A major purpose of organizational governance and control is to prevent the emergence of problems, which could be detrimental for the realization of organizational goals. However, all governance strategies can fail (Miller, 1992). We suggest that the failure of managerial governance strategies becomes more likely in situations of organizational change, and that a social dilemma perspective forms a useful starting point for an analysis of such problems. We distinguish between four types of problems as they result from interdependence between organizational members.

First, in *coordination* problems, both parties strive for the same goal and need each other to attain it. A coordination problem is given if two actors, who can choose between two alternative courses of action, A and B, both receive the same high payoff if both choose A or both choose B, whereas both receive the same low payoff if one of them chooses A and the other B. If they know for sure which alternative the other player will choose, the solution to this coordination game is self-enforcing, because it is in each actor's best interest to choose the same option that the other party chooses. Second, *bargaining problems* are structured around the division of

resources between two or more parties. Here, both actors have a common interest to avoid conflict, because both of them would be worse off if no exchange is realized. The bargaining is about how the surplus will be divided between the two: each party prefers the solution that is within the zone of agreement, but wants to maximize his or her own outcome. Both parties differ in their points of view of how concessions should be made. Third, a mutual dependence relation between the actors and a conflict between the individual interest and the common interest characterizes *social dilemma* problems. The latter creates the possibility of defection by one or both parties. Two important and well-known social dilemmas are the prisoner's dilemma game and the trust game. In both situations it is rational for each party to defect, though both would be better off if they would cooperate. Fourth, in *pure competition* or zero-sum problems, the interests of both parties are completely opposed; i.e. one party can only obtain positive utilities at the expenses of the other party. The difference with a bargaining game is that there is no incentive to avoid or settle a conflict situation.

The four types of problems differ with regard to their severity and – as a consequence – the difficulty or ease with which they can be resolved. The coordination game represents the 'simplest' problem, since the cooperative outcome is preferred by both. Bargaining problems are more difficult to solve, but they are still less problematic than social dilemmas. Whereas bargaining parties are better off if they cooperate - they just need to determine the 'right' division of the resources, defection is the dominant strategy in social dilemmas. Finally, the most severe types of problems arise in pure competition situations, because the gain of one exchange partner is equivalent to the loss of the other exchange partner.

The occurrence of these four types of problems certainly is not limited to situations of organizational change. However, periods of restructuring are particularly likely for such problems to emerge, because of the increased uncertainty and ambiguity that they cause. Change often implies a redefinition of tasks, reallocation of responsibilities, rights, duties and patterns of interdependencies. Before the new 'order' completely replaces the old one, old and new rules might coexist for a while or even contradict each other. We assume that uncertainty about potential choices of other actors will be highest in the early stages of a transition process and gradually decrease as the change process proceeds. The early stage of a change is the phase when new rules have to be introduced and implemented, when new interdependencies are established, and new functions are specified. In the course of the transition, these uncertainties will gradually decline, for two reasons. First, employees will gradually become acquainted with the new situation, the new exchange structures and the trustworthiness of their new exchange partners. They will try to avoid entering exchanges with actors whom they consider to be untrustworthy. Second, management will gradually come to know about the unintended consequences of earlier change interventions. With their information deficits decreasing, managers will proactively attempt to prevent the occurrence of potential problems, and be better able to resolve ongoing ones. To achieve this outcome, managers will alter the payoff structures for the involved actors in such a way that their interests become aligned (Wolff, 2000). Given the potentially disruptive effects of unresolved social dilemmas for cooperation and performance in organizations, management has a strong incentive to focus on the prevention and solution of social dilemmas. A likely side effect of this strong incentive to solve social dilemmas will be that multiple solutions will emerge and be implemented. As a result, new coordination problems will emerge.

In sum, we hypothesize that during the process of organizational change there will be a decrease in the relative frequency of social dilemma and pure competition problems through time, whereas the number of coordination problems is likely to increase.

DATA AND METHOD

An investigation of this idea requires the collection of fine-grained information concerning the occurrence and nature of problems during the process of organizational change. For a first explorative test of this general hypothesis we therefore opted for a case-study approach. We selected a Dutch bank that was currently going through a major reorganization. It had over 200 offices in the Netherlands, and about 6000 employees. The organizational change that forms the focus of the present study was started in 2001. It is a sequel to an earlier reorganization, which has been completed only two years earlier. The purpose of the reorganization was to reverse the previous decentralization policy and re-establish a highly centralized organization. A major element of the transition consisted in the switch from service orientation to a sales orientation, necessitating substantial changes to the organizational and regional structure. Semi-structured interviews were conducted with eighteen site managers and regional directors of the bank, including a high-ranking member of the workers' council and the HR-manager. Interviewing was done in the period from October 2001 to February 2002. Two respondents were interviewed twice. The second interview took place at a later stage of the reorganization, one in October 2002 and one in February 2003. The resulting 20 interviews were transcribed and coded.

We used a cognitive mapping approach in order to detect the different types of problems. Cognitive mapping is a form of text analysis that reconstructs causal attributions as they are made by respondents (Axelrod, 1976). First, we identified all the concept variables in a text. Concept variables refer to an entity that can take different values (e.g. 'education' can be high or low, a campaign can be successful or unsuccessful, etc.). Second, we identified the causal relationships between the concept variables, as the respondent presents them. In order to discover different types of game structures in the text, a third step needs to be performed. Here, we build on the procedure as Anthony et al. (1994) developed it: for each causal statement, we determined whether the concept variables affect the utility of an actor negatively or positively. For example, take the following statement of a respondent: "...the introduction of the new system of functions would certainly increase the efficiency of the bank, but people at the teller were afraid that they would loose their jobs". This statement would be mapped by extracting three concept variables (new functions, efficiency, job loss), and two positive causal attributions (new functions -> efficiency, new functions -> job loss). It also refers to two categories of actors (bank, employees at the teller), the so-called 'utility nodes'. Since the bank would benefit from efficiency, and employees at the teller would be worse off if they loose their job, there would be a positive line connecting the concept variable 'efficiency' with the utility node 'bank', and a positive line connecting the concept variable 'job loss' and the utility node 'employees at the teller'. Which actor is negatively or positively affected by a concept variable is sometimes mentioned explicitly by the respondent, but often also had to be inferred from the text.

We now present the formal structures of the four types of problems that can occur during a restructuring process. Anthony et al. (1994) developed three of the four operationalizations of game structures in cognitive maps: the coordination game, the bargaining game, and the prisoner's dilemma. We developed the operationalizations of the pure competition game. For a detailed discussion of the method, we refer the reader to the original article by Anthony et al. (1994). Figure 1 presents the formal structures of each game. All problem structures have in common that they comprise two different actors (i.e. utility nodes). They differ with regard to the number of concept variables and the relationships between the concept variables on the one

hand, and the link between the concept variables and the utility nodes on the other. A cooperative relationship is represented by two arrows of the same sign originating from it to two utility nodes. A positive and a negative arrow originating from a concept variable towards two utility nodes define a conflictive relationship.

Figure 1 about here

A *coordination game* consists of a concept variable, and two utility nodes (see Figure 1a). The concept variable affects both utility nodes in the same way; i.e. both links are either positive or negative. In theory, two negative effects could be recoded into positive effects by relabeling the concept variable (e.g. the statement 'intended plans are not carried out, which is bad for the bank and the employees' could be recoded as 'carrying out intended plans is good for the bank and the employees'). We choose to preserve the 'positive' and 'negative' statements. Bargaining problems (figure 1b) contain two concept variables: a 'concession node' and a 'disagreement node'. Since all parties will be negatively affected if no agreement is achieved, a negative relationship links the disagreement node to both utility nodes. At the same time, a concession implies a gain for one party, and a loss for the other party. Finally, a concession reduces disagreement, which implies a negative effect of the concession node on the disagreement node. In *prisoner's dilemma* and *trust games,* there is a common good which would produce positive utilities for both parties, and there is a risk of defection, creating negative utilities of the party that does not defect (see Figure 1c and 1d). A *pure competition* problem (Figure 1e) is defined by two conflictive relationships, i.e. the utility of the first actor is positively affected by the first concept variable, and negatively by the second, whereas the utility of the second actor is negatively affected by the first concept variable, and positively by the second. To explore the hypothesis that problem severity increases in the course of organizational change, we constructed the ordinal variable 'problem severity' (coded "1" for positive coordination games, "2" for negative coordination games, "3" for bargaining games "4" for social dilemmas, and "5" for pure competition games). Starting from mid 2000 and ending in the beginning of 2003, five periods of half a year each were used to classify when each problem occurred.

RESULTS AND CONCLUSION

The cognitive mapping of the 20 interviews led to the identification of 174 problem structures as defined above. Almost 60% of the 174 problems can be classified as coordination games. 'Negative' and 'positive' coordination games are equally represented. 32% of the problems are social dilemmas. 3% were bargaining games, and 4% were pure competition games. 102 games could be located in time. The remaining problems could not be placed within the chronology, either because the specific date was not mentioned during the interview, or because it is part of a general statement about "how things are dealt with around here". None of the bargaining games could be located in time. We identified 16 different categories of actors for the utility nodes, including formal corporate entities ('the bank', 'board of directors', 'worker's council'), regional units ('the site', 'the district') and categories like 'the employees', 'regional directors', and 'management'. The categories 'employees', 'board of directors' and 'bank' are mentioned most often. A correlational analysis indicates a negative association between the ordinal variable 'problem severity', and the variable 'time' (Spearman's rho = -.179, $p<.10$, $n=95$). This result supports our general hypothesis that problem severity decreases through time. That is,

social dilemmas and pure competition games become less likely in later phases of the reorganization process, while coordination problems are likely to increase.

Changes in the standardized adjusted residuals of each strategy in each period indicate that social dilemma problems are more likely to occur in the first period, are neither statistically over- or underrepresented during phases two, three and four, and are clearly underrepresented during phases five and six. Pure competition problems are underrepresented in the earlier stages of the reorganization; their likelihood increases in later phases, but drops in the final phase. The majority of problems during the reorganization were classified as coordination games. Their number increases during the change process. 'Positive' coordination games are underrepresented in the beginning and overrepresented later. The opposite holds for 'negative' causal statements about coordination problems. Apparently, the transition processes do not only contribute to a resolution of social dilemmas through the realignment of interests, but also seem to change the way in which employees talk about problems.

While coordination problems dominate during the change process, still more than a third of the problems had the structure of a prisoner's dilemma, whereas only a small fraction of the problems were bargaining games. This pattern indicates that during the reorganization under study, what seems to be at stake is the production of collective goods rather than issues related to the bilateral distribution of resources. Management's attempts to govern the transition process seem to be successful in the sense that the number of social dilemma problems gradually decreases through time.

Our study advances previous research on organizational change in two respects. First, we sketch a theory of problems and their dynamics during a reorganization process. A social dilemma approach seems a fruitful basis for further theory building on antecedents and solutions of problems during planned organizational change. Second, we use a theory-driven structural method of analyzing texts. Rather than inductively deriving a typology from the texts, we opted for a structural approach to identify different types of problems. In our study, this method provided a useful tool for the identification of problems occurring during organizational change.

ENDNOTE

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REFERENCES

Anthony, D. L., Heckathorn, D.D. and Maser, S.M. 1994. Rational Rhetoric in Politics – The Debate over Ratifying the U.S. Constitution. **Rationality and Society,** 6 (4): 489–518.

Axelrod R.M. (Ed.). 1976. **The Structure of Decision: Cognitive Maps of Political Elites.** Princeton, NJ: University of Princeton Press.

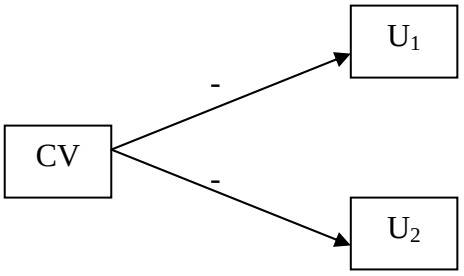
Miller, G. 1992. **Managerial Dilemmas. The Political Economy of Hierarchy.** Cambridge: Cambridge University Press.

Wolff, B. 2000. Incentive-Compatible Change Management. In W. Raub, J. Weesie & J. Bruins (Eds.), **The Management of Durable Relations: Theoretical and Empirical Models for Households and Organizations (CD),** Amsterdam: Thela Thesis.

FIGURE 1: EXAMPLE PAYOFF STRUCTURES FOR FIVE TYPES OF PROBLEMS
(Adapted from Anthony et al., 1994)

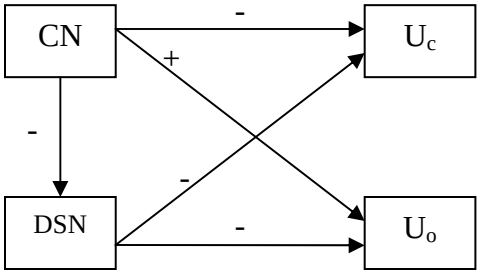
A. Coordination problem

		Player 2	
		A	B
Player 1	A	1,1	-1,-1
	B	-1,-1	1,1



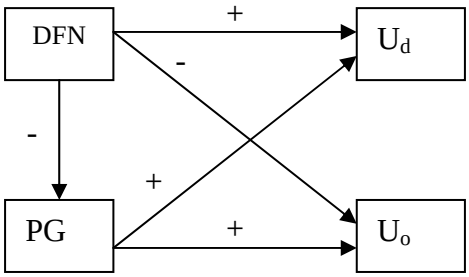
B. Bargaining problem

		Player 2	
		A	B
Player 1	A	2,1	-1,-100
	B	0,0	1,2



C. Trust problem

		Player 2	
		A	B
Player 1	A	4,4	1,3
	B	3,1	2,2

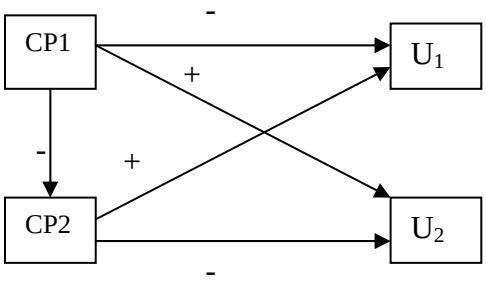


D. Prisoner's dilemma problem

		Player 2	
		A	B
Player 1	A	3,3	1,4
	B	4,1	2,2

E. Pure competition problem

		Player 2	
		A	B
Player 1	A	0,0	-10,10
	B	10,-10	0,0



Legend:

- CV = Concept Variable
- U_1= Utility of actor 1
- CP1=Competition Node 1
- U_2= Utility of actor 2
- CN= Concession Node
- CP2= Competition Node 2
- DSN= Disagreement Node
- U_c= Utility of Concession maker
- U_o= Utility of Other
- DFN= Defection Node
- PG= Public Good
- U_d= Utility of Defector