Power games and organizational learning

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Power-games and organizational learning: Lessons for Organizations Management.

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ABSTRACT:
The paper uses the work of CROSS (1969) about negotiation to show that Time of conflict and power-games in the organizations are not so inefficient for the organization as it first would seem. The article shows especially that the more individuals in conflict use time for negotiation, the more they reduce their pretentions. As a notable result, this formal result is consistent with the Management Socio-Economic approach, Henri SAVALL (1981) developed.

KEY-WORDS:
Game-Theory; Conflicts; Negotiation, Organizational Learning; Management.

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INTRODUCTION: TIME IN THE ORGANIZATIONS

For many of the authors of Strategic Management such as SAVALL (1981), SAVALL and ZARDET (1995), the manager should pay very much attention to Organization and conditions of working within the organization, to communication and to Time-Management. These elements are very often at the origin of socio-economic problems of functioning within organization.

Analyzing the organization, SAVALL (1981)[1]consider that there exist two distinct activities within the Organization: -the ones which directly contribute to the production of goods, and the ones which do not contribute directly to production and distribution of goods on markets but facilitate it. The first activities correspond to a time which is directly productive. The second correspond to *the indirectly productive Time* and represent tasks of concertation, control, management. And then, for SAVALL, the most one individual has got responsibilities in the organization, the most his ratio: (Indirectly Productive Time/Directly Productive Time) is high.
And the Socio-Economic Analysis of the Organizations SAVALL (1981) developed reveals that the *indirectly productive Time* can never be reduced to Zero for all the individuals. For a good functioning of the organization, all the individuals need time for collecting informations, and communicate with others... Experiences of an excessive rationalization have been very costly because it reduced the interest of the worker for his work (SAVALL,1981). At the opposite, when the organization leaves a possibility of Time indirectly affected to the production, hidden performances are measured. (SAVALL and al. are specialized in the valuation of hidden costs and hidden performances in the organization. Hidden performance can result from a communicated suggestion that allows a productive change, it can comes from the realization of activities of maintenance that would not be achieved if the organization was excessively rationalized, these maintenance activities can make the equipment-life longer....)
Then, the organization of time has to be structured in respect of the individuals. Each worker needs to be efficient to dispose of flexibility in the temporal organization of his work.

The object of this contribution is to mobilize Game-Theory to illustrate a particular aspect of the Socio-Economic analysis of Time structuration in the Organizations. Using the theory of negotiations, the modelization reveals that the time used by the individuals for negotiation in conflict is useful to and finally leads the individual to restrict their initial pretentions. It is then a particular confirmation of the theory of SAVALL (1981)

The TIME OF NEGOCIATION AND ITS CONSEQUENCES.

The CROSS (1969) *Theory of negotiation* allows to take into account the individual learning when individual is integrated into a social group and submitted to negotiations. In this sense, negotiation is defined as a social relation which may lead an individual to accept concessions of actions or payments towards another one.
In a N-size organization, let's consider that the agent "i" wishes to obtain from negotiation the quantity q_i which can measure a wage-surplus resulting from negotiation or a more important participation to benefit or any qualitative recognition..... It is supposed that each player can appreciate which is the

[1] Henri SAVALL, Professor of Management at the University of Lyon 2 (France) has founded a research and intervention center called "ISEOR" (Institute of Socio-Economics of the Organizations) which develop a methodology of audit founded on the observation and analysis of socio-economics problems of functioning.

concession-rate of the others. The player "i" considers that the concession-rate of player "j" is γ_{ij}.

Ofcourse, individually considered, no one wants to make concession and then $\gamma_{ij}.=0$

The total sum to share is M and it can be supposed that initially, the individuals collectively and without coordination wish to obtain more than is possible:

$$\Sigma_i\ q_i \geq M \qquad \text{(Eq.1)}$$

That's the stake of negotiation and the origin of conflict.
The player "i" considers that the time he needs to obtain an agreement giving him the objective-quantity q_i he wishes to obtain is W_i with:

$$W_i = (\Sigma_i\ q_i - M)/\Sigma_j\ \gamma_{ij} \qquad \text{(Eq.2)}$$

The sum q_i he wishes to obtain represents for the agent "i" a utility U with

$$U_i = f(q_i).e^{aw}{}_i \qquad \text{(Eq.3)}$$

Where a_i is the actualization rate of agent "i". It is supposed that the more he has contacts with the other individuals, the more the agent "i" learns and corrects his estimations in function of the concession-rates of the others as described in Equation 4:

$$d_{\gamma ij}/d_t = \alpha_i\,(-q_i\ \gamma_{ij}) \qquad \text{(Eq. 4)}$$

where α_i is the learning-rate of player "i".
Then, if he is rational, "i" will only make concessions if the time lost to pursue the conflict costs more than the gain which would result from the maintenance of his requirements.
Note with C_i the cost the player pays for each period of negotiation. The actualized sum of negotiation costs will be:

$(C_i/a_i).(1- e^{-aw}{}_i)$ and then the utility for requirement-maintenance is given in Equ. 5.

$$u_i = f(q_i).e^{-aw}{}_i - (C_i/a_i).(1- e^{-aw}{}_i) \qquad \text{(Eq.5)}$$

The player "i" will fix the quantity q_i he wishes to obtain from the power-game when maximizing his utility-function. That is (First Order Condition):

$$f'(q_i)- f(q_i) + (C_i/a_i).(a_i/\ \Sigma_j\ \gamma_{ij}) = 0 \qquad \text{(Eq.6)}$$

This result is obtained after derivation of W_i vs q_i (see equation 2).
Following SEUROT (1979) and differentiating vs Time:

$$dq_i / dq_t = \frac{-1}{(f''(q_i)/f'(q_i)).\Sigma_j\ \gamma_{ij}- a_i}.\ \Sigma_j\ d\gamma_{ij}/dt \qquad \text{(Eq. 7)}$$

Consider then $A_i = -\alpha_i / ((f''(q_i)/f'(q_i)).\Sigma_j\ \gamma_{ij}- a_i)$ then Eq 7 becomes:

$$dq_i / dq_t = (A_i/\ \alpha_i).\ \Sigma_j\ d\gamma_{ij}/dt \qquad \text{(Eq. 8)}$$

By assumption, $d\ (\Sigma_j\ \gamma_{ij})\ /dt = \Sigma_{j\neq i}\ (d\gamma_{ij}\ /dt) = -\alpha i\ (\Sigma_j\ q_j + \Sigma_j\ \gamma_{ij})$ (Eq. 9)

Then,

$$dq_i / dt = = \frac{\alpha_i}{(f''(q_i)/f'(q_i)).\Sigma_j\ \gamma_{ij}- a_i}.\ (\Sigma_j\ q_j + \Sigma_j\ \gamma_{ij}) \qquad \text{(Eq. 8)}$$

This equation is a measure of the response-function of "i" to changes in the concession-rates of his rivals. f"(qi) < 0. **This means that the worker "i" is progressively less ambitious when he knows the concessions the other players are ready to do.** This result confirms the evoked managerial analysis of SAVALL (1981).

CONCLUSION

More the agent uses his time to learn which are the pretentions of the others and more he reduces his own pretentions. In terms of costs for the collectivity, the time used for this individual learning, which is unproductive, is finally beneficial to the organization. (See Appendix). Then, the time of Power-game W_i can allow to substantial economies. Unproductive Time may then be organizationally useful. This modelization which should be confronted to experimentations in the organization

confirms the relevance of a socio-economic approach to analyze the complex relations which constitute the organization.

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APPENDIX:

Given Eq. 9 and as $dW_i/ dq_i = 1/ \gamma_{ij}$,

$$dq_i / dq_t = \frac{-1}{(f''(q_i)/f'(q_i)).(-na_i)} . \frac{1}{(f''(q_i)/f'(q_i)).\Sigma_j \gamma_{ij}} .\Sigma_j \, d\gamma_{ij} /dt$$

Considering $B = \frac{-1}{(f''(q_i)/f'(q_i)).(-na_i)} . \frac{1}{(f''(q_i)/f'(q_i))}$

Then, $dq_i / dq_t = B. (\delta W_i/ \delta q_i) . (d\Sigma_j \gamma_{ij} /dt)$

Consequently, because $B \leq 0$, more (dW_i/ dq_i) is high, the more the time to obtain a more important gain of one unit is important, and more the absolute-value of dq_i/dt is important, that is more the individual reduces his pretentions.

Q.E.D.