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# Alteration of Decision-Making Processes in Organizations

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The concept of decision-making in organizations has been very widely studied, and numerous definitions have been put forward. To help define this concept more precisely, we can cite the following authors.

According to Le Moigne [LEM 74], to make a decision is to identify and solve the problems that any organization will inevitably face.

We can also cite Kast [KAS 93], for whom decision-making is synonymous with choosing between several existing alternatives, each with different consequences. The selection is made in accordance with very precise criteria.

Stal [STA 00] holds that a decision is a process which leads an actor to answer a given question.

For Longueville [LON 03], decision-making is a process of information transformation. It leads an actor or group of actors within the organization to deal with an issue, giving rise to an action.

Thus, decision-making can be simplified as the choice of an option from a set of alternatives by an actor or a group of actors in response to a problem faced by an organization, with this choice being guided by a number of very precise criteria.

## 1.1. Decisional processes

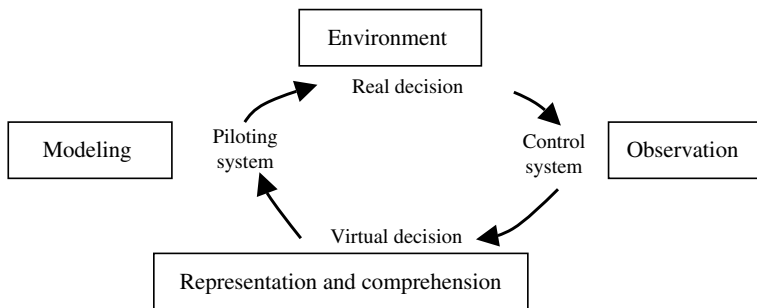
In reality, this is a complex activity, which a number of authors have suggested should be defined and modeled as a process; thus, we define the decisional process, which generally comprises several stages.

For Simon [SIM 77] the process is made up of the following stages:

- intelligence: this is a cognitive process that involves gathering information about the problem at hand, its constraints and its environment;
- design: this is a stage of designing, developing and analyzing solutions to deal with the problem;
- choice: the choice of the solution is adopted here in view of the criteria developed and adopted in the previous stage;
- review: at this stage, the previous stages are re-examined – i.e. the decision-maker continues to look for information whilst designing a solution to the problem in a continually looping process.

Furthermore, Simon describes this process as being neither linear nor sequential; the “review” stage is ever-present in the mind of the decision-maker, who refines the criteria guiding the decision while continuing to look for information and construct possible solutions.

Courbon [COU 82] also defines this process as being cyclical, so the solution can be readjusted as the process advances.

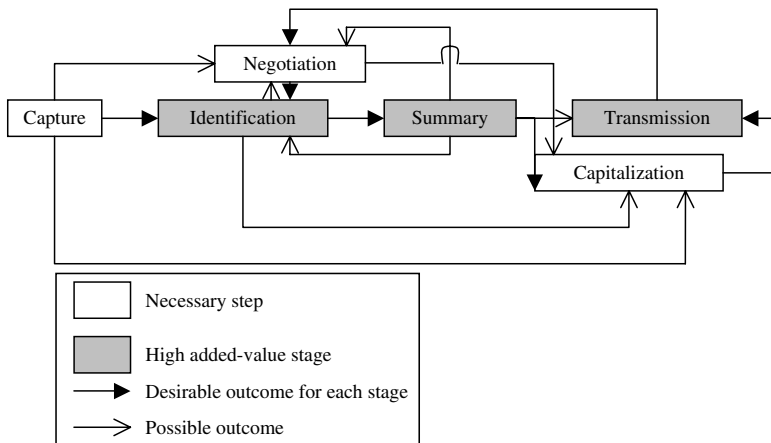


**Figure 1.1.** *Courbon's decision-making process [COU 82]*

The specific characteristic of Stal's model [STA 00] is that it considers a multi-actor process. She puts forward a multi-actor model of decision-making called the DTL (decision time line). This process is made up of several stages, at which any of the actors can intervene.

Lavergne [LAV 83] proposes a six-stage breakdown of the decision-making process:

- 1) definition: the object of the decision, the context and the ethics are defined;
- 2) information: the decision-maker looks for and gathers information useful for the decision;
- 3) analysis: at this stage, the decision-maker organizes all the pertinent information gathered;
- 4) solution: at this stage, the actor designs and concretizes the hypotheses for the making of the decision;
- 5) determination: a choice is made by weighing up the hypotheses, the possible consequences and the ethical constraints;
- 6) implementation: the decision is applied in concrete terms.



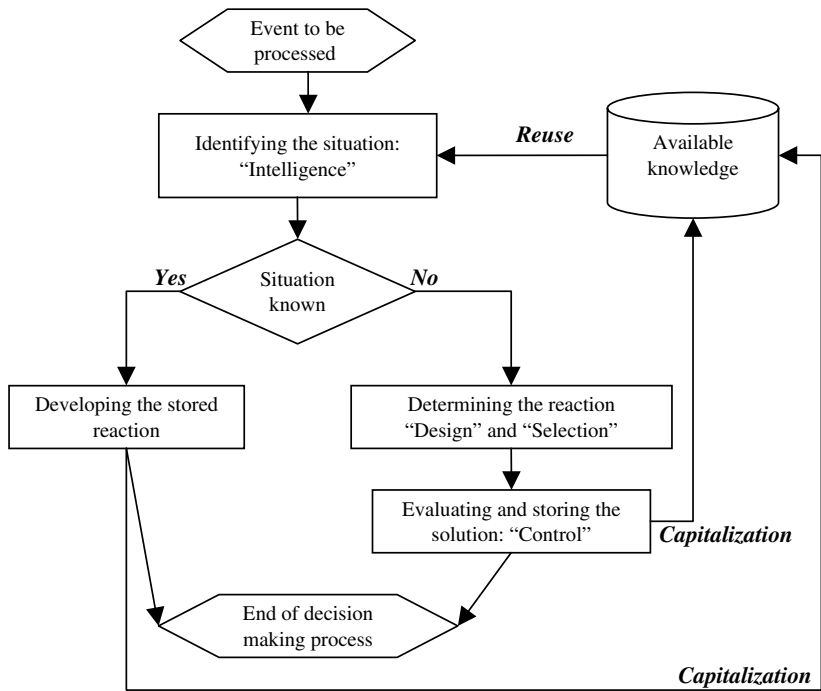
**Figure 1.2.** DTL (decision time line) [STA 00]

This process has the peculiarity of including the implementation of the decision-making process.

The originality of Cauvin's model [CAU 05] lies in the fact that it actually takes account of the process of knowledge capitalization in the decision-making process.

All these models of decisional processes exhibit certain common characteristics:

- they all comprise multiple stages;
- they may involve single or multiple actors;
- in the more recent models, a process of knowledge capitalization is coupled with the decisional process.



**Figure 1.3.** *Cauvin's decisional process [CAU 05]*

In this chapter, our aim is to show how the processes of decision-making in organizations are currently evolving. This observation will serve as a base from which to demonstrate how the tools hitherto developed and used must evolve in order to better serve the needs of a changing society.

## 1.2. Introduction of ICT in organizations

Tétard [TÉT 02] showed that the introduction of ICT into organizations inevitably leads to fragmentation of working time. He also showed that information overload is both a source and a consequence of this fragmentation. Given that humans have limited cognitive capacities, we must attempt to reduce this excess workload, using appropriate tools.

In addition, with the advent of ICT, the classic DSSs become partially usable, although only when the group of decision-makers comes together. We then witness a reinforcement of the collaborative work between different actors involved in the decision-making process.

In collaborative work, it is crucial to model the cooperation. The goal is to encourage shared work. The processes of cooperation then take center stage, regardless of the goals of the task.

The need of businesses to remain reactive and the technological evolution are leading to wide-reaching changes in the organizational and cognitive processes.

Organizational processes are evolving and tending towards having more parties involved in the making of decisions: the responsibilities and the initiative tend to be more distributed.

On the other hand, the necessity to report and inform becomes a generalized imperative. A large proportion of a manager's actions consists of securing the participation of and motivating as many of the actors concerned as possible.

Even when the organizational responsibility for the decision is assumed by a single person, the decision is almost always prepared through collaborative work. Processes of cooperation increase; they play an increasingly important part in decision-making, because the situations dictate that it be so. In particular, two fundamental conditions of cooperation are encouraged by this evolution:

- Intensification of interactions: because of this, there is an increased potential for cooperative behaviors, and these behaviors do indeed increase (see Axelrod [AXE 92] and Delahaye [DEL 95]).
- Intensification of exchanges: this means players are better able to apprehend the other players' goals, which is also a significant factor in establishing cooperative behavior (see [ZAC 90]).

The organizational context is omnipresent in decision-making. It forms an integral part of individual decisions by empowerment of the individual actor; this, in itself, is an integral part of collective decisions. By definition, organizational decisions build up the organization, but they also determine its actions. The consequence is that decision-making is often a diffuse process in collective and organizational activity. Decisions are constructed gradually, circulating through different "arenas" of exchange between actors. When the decision is taken, in a manner of speaking, a change in the organizational state takes place.

In collective activity, the process of decision-making also provides a forum for negotiations between the actors involved in it. In this to-and-fro that Simon [SIM 77] calls problem setting/problem solving, where the problem is reformulated constantly to the point where it can easily be solved, until it reaches an intermediary state which is close to the final state, there is negotiation between the actors about the way in which to pose the problem, and contrasting of the different ways in which it could be posed.

Indeed, it is strategically advantageous, from everyone's point of view, to clarify the terms in which the problem is posed in different ways – notably by using contextual elements which have a bearing on the definition of the problem, and on the quantifiable consequences of certain choices.

All these aspects suggest that we not only need to review our model of decision-making, but to redesign the decision support which we offer, focusing on three essential elements: the plethora of information, the importance that must be attached to the processes of innovation and design, and finally relativization of the choice stage and introduction of negotiation and other collective processes.

An actor within the organization is placed in a new situation, which is characterized by very easy access to information (to a plethora of information, even), increased participation in many proceedings, meetings and groups spanning various levels of the organization. She/he therefore has to deal with shorter time-periods in which to take a stand on a given issue, and a set of situations which frequently lead to “cognitive overflow syndrome” (see Lahlou [LAH 00]).

Of the various cognitive processes which are becoming essential for dealing with new situations, we can cite relevance selection and the vigilance which this involves. The relevance of a fact is perceived by an individual based on the strong reactions that it arouses in him or her (see Sperber and Wilson [SPE 90]). Thus, it is a quality of the object which is evaluated on the basis of the effect it has on the subject who perceives it. As we can see from this standpoint, cognition is thought of as being “situated”. The need to perceive relevance requires a great deal of involvement of the part of the individual, in relation to his/her task and to the organization.

Indeed, in order to quickly perceive what is relevant for the company, individuals must have an in-depth knowledge of its interests, needs and outlooks. The more relevant a fact is, the less cognitive effort is needed. Vigilance is a deliberate state of mind on the part of the actor, which increases his/her chances of perceiving the relevant elements around him/her.

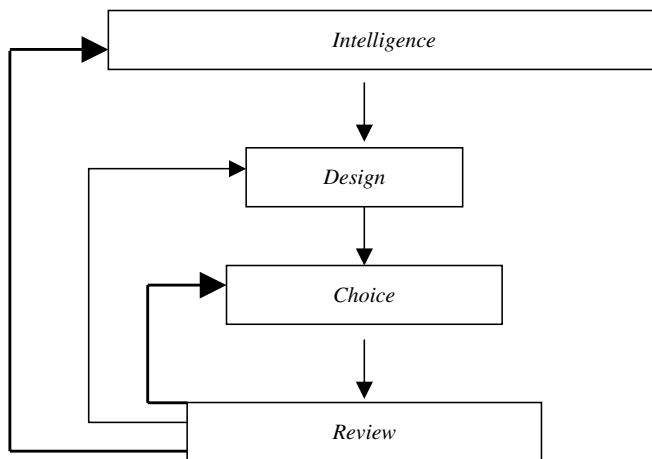
In order to perceive the relevance of information and capitalize on the opportunities which they may represent for the company, the actor must exercise vigilance.

### **1.3. The decision-making process revisited**

Based on these initial observations, we propose to revisit the canonic model of decision-making put forward by Simon, on the understanding that we shall still use this framework to model an actor’s thought process, which takes place within a tenth of a second [SIM 77]. We have just described this model, and it can be summarized thus: with the environment changing more quickly, each

actor has to increase his/her vigilance and watchfulness. Of the phases distinguished by Simon (Figure 1.4), the intelligence phase becomes more active and more complex, because the environment which has to be taken into account in that phase is more complex. Yet the way in which that environment is “read” is also altered: the actor has an increased role in looking for relevance. Whereas previously, he/she had to search through elements of information so as not to overlook any that were important, he/she now has to perform lightning-quick filtering of a plethora of information. The design phase also takes place more often, because each visit to the environment involves evaluating the relevance.

The choice phase, it seems, is not greatly altered, given that, in the ultra-quick process described above, there is no real generation of similar alternatives and systematic comparison and selection of one of these alternatives by a rational process of evaluation and reasoning.



**Figure 1.4.** *The progression of Simon's phases of decision-making [SIM 77] revisited*

Hence, the progression of the loop is altered (Figure 1.4): the first two phases are visited more often than the third. The review loopback from the choice stage to the intelligence stage is reinforced, but so too is the loopback from design to intelligence. Many iterations of this



cycle take place before making a choice or even *thinking* about making a choice. The previous model – whereby information is sought in order to present several possible solutions in a “design” phase geared towards the making of a choice – is evolving toward an emerging vision where running over the available information without preconceptions gives rise to alternatives, one or other of which will occasionally be decided upon. Whilst not departing from Simon’s model, in a way, we run through the loop differently, and the processes which each phase covers have changed. It is important not to view the sequentiality of this model as anything more than a device to help thinking – as Simon himself pointed out.

We shall also take from this that the changes in the organizational and cognitive processes occur simultaneously, and in a causal and interlinked manner (for further details, see Teulier and Zaraté [TEU 01]).

In addition, Pomerol and Adam [POM 04] showed that not only did Simon’s research have a profound impact on the domain of information systems, but also, although he did not work directly on decision support systems, he greatly influenced the design of such systems. Indeed, they showed that his contribution regarding the process of decision-making, the principle of limited rationality and the connections between decision-making, organization and management, is of vital importance in the domain of the decision support systems which we shall describe in Chapter 5.

## **1.4. Conclusion**

The work cited above has shown that the processes of decision-making in organizations have evolved from a cognitive point of view. Indeed, beginning with Simon’s model, we have shown that there is a strengthening of the feedback loops from the last phase – review – back to the choice and intelligence phases. This process has also evolved in organizational terms. We have gone from the context of a single decision-maker to an environment with multiple decision-makers, who can work in synchronization or not, and apart or together. Hence, it is necessary to analyze these particular modes of decision-making. This is the topic of the next chapter.

