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INTERVENTION AND ACTION ON DECISION PROCESSES OF THE LARGE FIRM : CONSTRUCTING A METAMETHOD

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SOMMAIRE

F O R E W O R D

This text originates from a thesis supported at the UNIVERSITY OF PARIS-IX DAUPHINE in december 1982.

However it is neither an abstract nor a gathering of extracts from the thesis. Rather, it concentrates on presenting original contributions to the problem of intervention and organisational change.

What is put stress on, therefore, are essential aspects of the approach that leads to the elaboration of the metamethod of intervention.

More general or familiar aspects of the problem are mostly left out. These are, however, developed in some detail in the thesis (Ref.13).

INTERVENTION ET ACTION SUR LES PROCESSUS DE DECISION DE LA GRANDE ENTREPRISE ECONOMIQUE : CONSTRUCTION D'UNE METAMETHODE

RESUME

L'adaptation de l'entreprise économique à un environnement complexe et turbulent nécessite une mutation d'un système organisationnel bureaucratique classique vers un système axé sur le processus dialectique bureaucratie - "adhocratie".

L'élaboration d'un outil méthodologique et normatif, générateur d'actions efficaces pour mener à bien le changement, se révèle alors indispensable pour étayer l'intervention en entreprise.

La construction d'un tel outil passe par la constitution d'un lexique de l'intervention et l'élaboration d'un modèle intéractif et rétroactif homme d'étude / lieu et acteurs de l'intervention.

INTERVENTION AND ACTION ON DECISION PROCESSES OF THE LARGE FIRM : Constructing a metamethod

ABSTRACT

Adaptation of the economical firm to a complex and turbulent environment requires mutation from a classical bureaucracy to a system based on a dialectic process between bureaucracy and "adhocracy".

A methodological and prescriptive tool is then necessary to back up intervention and help generate effective actions for change.

Development of such a tool brings about the need for formal intervention vocabulary and elaboration of an interactive, feed-back model including intervention consultant together with actors of change within the firm.

KEY-WORDS : DYNAMIC PRINCIPLE FOR CHANGE, ACTION GUIDE, CONCRETE PRESCRIPTIVE ACTION, PSEUDO-ARBORESCENT MODEL.

1. WHY IS INTERVENTION A PROBLEM ?

1.1. General Concerns

Managers have only too often spoken strongly against "scientific" decision theory which they claimed to be ill-adapted to real-world problems of the firm. The operational researcher is then apparently confronted with a choice between two alternatives : one is to try and tame an ever more complex and fugitive reality, the other, to set himself at the manager's service and listen to his problems.

There is yet a third alternative which does not appear immediately : it is that of exploring the no man's land which lies between the manager and the operational researcher.

Such an exploration is impossible nevertheless without methodological development integrating a set of factors ignored in most present day studies :

- recognition and acceptance of the manager - operational researcher dualism.
- detection of protean* characteristics of decision environment and recognition of necessity to find ways to deal with them,
- study of the influence of hierarchical structure of firms on decision processes at different organisational levels,
- role of subjective evaluation in the selection and construction of models as well as the choice of decisions to implement.

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* this image which is borrowed from Greek mythology indicates how changing and elusive decision environment is.

It is necessary to develop a metatheory which would consolidate and formalize the above requirements together with knowledge that has been acquired in the last ten or fifteen years through an abundance and diversity of models in Decision Theory.

The object of this study is to construct a method in the frame of this metatheory. This metamethod would be useful in backing up the intervention of an operational researcher on any decision process of the firm.

This metamethod takes root in certain propositions H. Boothroyd develops in "Articulate Intervention" (Ref.2). These are found to be prosperous and well-suited to the generation of effective and efficient actions on decision problems of the firm.

This metamethod also leads to a better understanding of the role of models such as that of Lewin - Schein which concentrate mostly on practical aspects of intervention implementation (Ref.14).

1.2. The starter : investment selection in an industrial firm

An a posteriori analysis conducted at the Investment Department of an important multinational firm revealed some illegitimate errors* in project evaluation and decision making.

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* these were the very words of the head of the Investment Department to the intervention consultant; he specified that these errors were designated as "illegitimate" because they could have been detected in advance and avoided by a suitable elaboration of the investment project.

These errors had to do with underestimating certain risks related to the investment project under study and neglecting the elaboration of alternative solutions when those risks* actually came true.

The formulation of the intervention problem by Investment Department staff corresponded to its general view of what a solution offered by a consultant should be :

"Develop formal criteria for risk evaluation and incorporate them in the formal procedures of the firm in a form suitable for implementation by the subsidiaries of the firm in preparing their respective investment proposals".

The consultant in charge of this intervention was external to the Investment Department. He decided to conduct a study in depth of all decision processes which seemed to be involved in the problem ; but soon he was confronted with a dilemma :

- should he consider the problem in the way it was expected from him to consider it, that is suggest changes in investment selection procedures hoping that they would bring about positive results on the rate of success of accepted investment proposals ?

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* this case study has been related in detail in the above mentioned thesis (Ref.13).

- should he concentrate on trying to bring about changes on the organisational process leading to the investment selection problem ?

In other words, should he, in an organisational game framework, try to "change the rules of the game" or "change the organisational game itself" (Ref.3) ?

This case illustrates the fact that a variety of questions can appear to the intervention consultant during an intervention. These questions do not always have obvious answers. It is therefore necessary to supply the consultant with an effective intervention methodology that will back up :

- his correct understanding and phrasing of the real decision problem.
- the detection of the deficiencies of organisational processes leading to or springing from the decision problem under study,
- satisfactory management of innovation and change thus allowing the firm to evolve towards structures more suited to a turbulent environment without, on the other hand,making the firm lose its patrimony and identity.

Although it cannot as of now be claimed that a universal method of intervention is emerging, the case study of the investment selection problem helped to develop some guidelines which combined to entrepreneurial flair could help the intervention consultant to :

- understand structures and means underlieing decisions,
- determine ways of opening up the space for decision and action in the firm,
- explore unknown or hidden regions of organisational processes that are often ill-known, obscure or latent,
- take into consideration differences in actor's individual rationalities and far from avoiding to recognise these differences, try to take advantage of them in order to increase individual synergies towards the goals of the firm,
- introduce sound and tested methodological tools which,while remaining simple, will allow the development of a methodological decision system audit inside the firm.

2. MULTIPLE RATIONALITIES AND "SCIENTIFIC" OBJECTIVITY

2.1. Plural logic and actors' multiple rationalities

A decision is rational if it is based on reason ; reason being the faculty by means of which man is able to know and judge.

"To Know" has an essentially objective connotation while "to judge" clearly implies a subjective faculty : an actor of the firm decides in accordance with his own reason which is probably not that of another actor and which is more or less distant from it.

The operational researcher himself being an actor who participates in the study sub-process of a decision process of the firm, will apply to that decision process his very own rationality.

For an external observer of the decision processes of the firm, it appears as if the mode of perception, evaluation and choice of solution of decision problems that different actors have to face, obeys a plural logic : one is not anymore in a "scientific" universe with two values "yes" or "no" but in a complex universe where there are at least as many values as participants to the decision process.

Recognition and consideration of this plural logic is one of the keys to successful intervention.

Discriminative elements of actors' subjective rationalities are essentially related to physiological, psychological and/or organisational attributes. They may give the actor an opacity of perception and restrict his scope of the field of possible solutions

to the problems the actor has to face.

One of the roles of external intervention is to try and detect some slack on actors' subjective attributes so that their scope of the field of possible solutions be modified in a way that would make them discover new approaches to their problems.

2.2. Rationality of a decision process - Emergence and Fundamental Postulate of Intervention

Curious as it might seem at first sight, it is necessary to attribute a decision process its own subjectivity and therefore its own rationality.

This is the only way to discover fundamental mechanisms and key-decisions that make a decision process run its course the way it does.

There is, therefore, a fundamental change of attitude of the observing actor towards the decision process under study.

Instead of analysing and dissecting observed phenomena a synthetic view is sought at first. This will allow the observer to define his position and relation to the process more clearly by operating an emergence from this process.

In terms of a diagram the new relation between observing actor and decision process resulting from this change of attitude would look as follows :

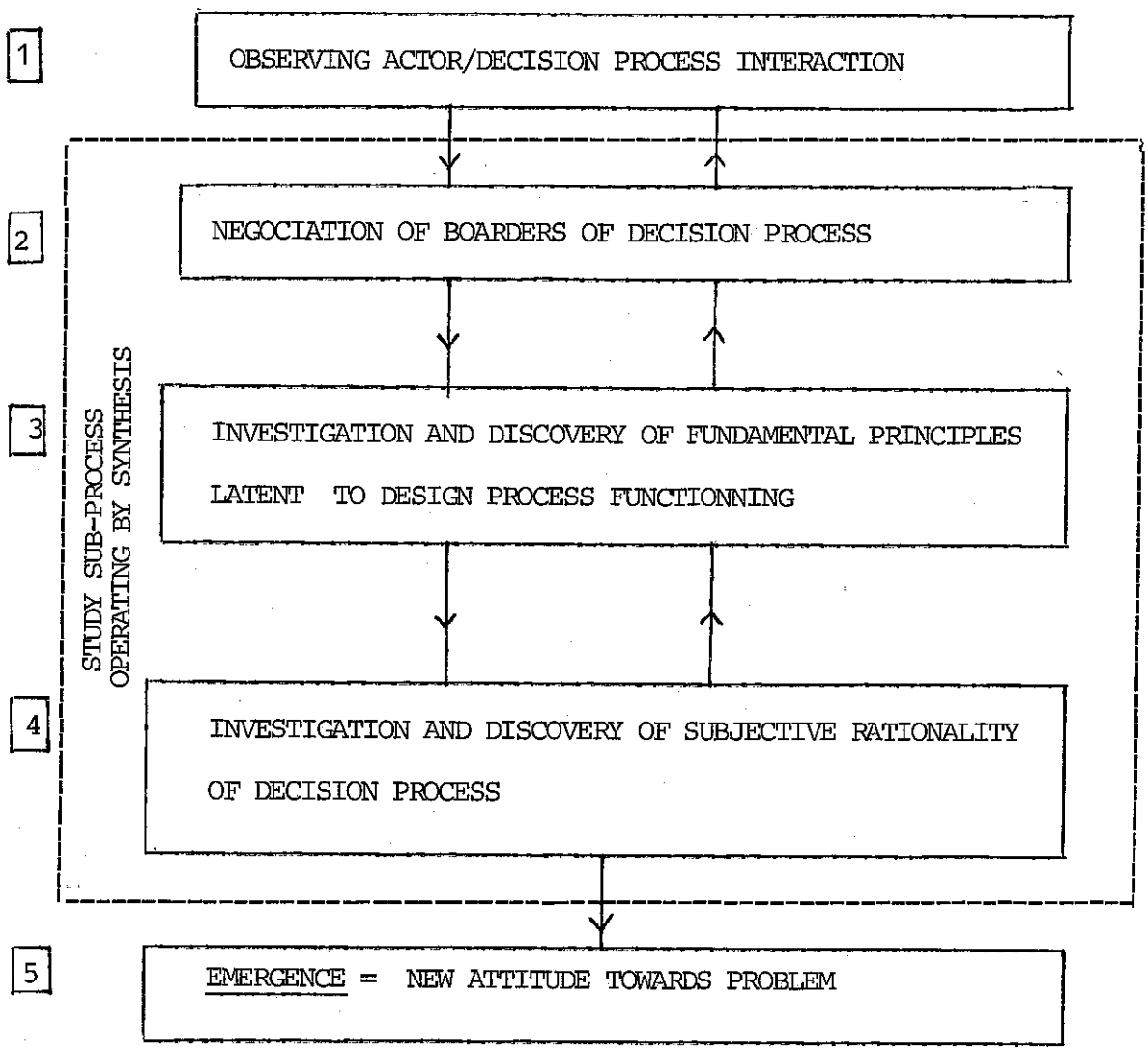

Fig.2.1

Each one on the boxes [2], [3] and [4] represents a problem on its own to be solved by the operational resercher. Satisfactory solution of the above three problems is a prerequisite to succesful intervention and fulfilment of the consultant's mission which is to:

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"obtain elements that contribute to enlighten decision making and, normally, to prescribe a behaviour that would help increase coherence between the decision process evolution on one hand, objectives and values the decision maker has to respect on the other hand" (Ref. 5)

Afore the illusion of scientific objectivity, the consultant should try to contribute by means of his "creative" subjectivity to the decision problem he faces while keeping the greater neutrality possible versus internal conflicts of the firm.
He should work with the actors participating in the decision problem in such a way that the most pertinent collective organisational game comes up to help enlighten the problem.
The attitude of the intervention consultant will be regarded as the Fundamental Postulate for intervention.

3. INTERVENTION AND CHANGE

3.1 Intervention vocabulary

Elaboration of intervention vocabulary is necessary to the construction of an intervention metamethod for several essential reasons:

- a better grasping of the problem in its generality comes out of research work on concepts and key-words for intervention,
- the process of formalising key notions of intervention allows for a certain abstraction which is a prerequisite to any elaboration of theoretical concepts,
- formal intervention vocabulary or at least a core thereof such as is presented in this paper may form a subject of discussion for practitioners of intervention, allowing them to compare experiences, focus on common problems and develop new concepts useful to implementation.

Two categories of objects will be defined :

- basic objects of intervention,
- corresponding attribute objects

BASIC OBJECTS	ATTRIBUTE OBJECTS
• The Firm • Organisational entity of intervention • Actor • Intervention Consultant	• Formal decision system • Decisional cloud • Decisional space • Decision domain • Absolute decision space of an actor • Relative decision space of an actor • Organisational function • Organisational Procedures • Problem • Problem Solution • Organisational Process • Physical underlay of organisational process • Decision process • Study sub-process • Intervention process • Process of Change • Decisional resources • Decisional acquisition.

Definition of all of these objects is given in detail in the above mentioned thesis (ref.13).

It is useful nevertheless to give the formal definition of some of these concepts for a better understanding of what follows in this paper.

Some of the most unusual among those concepts are presented below :

FORMAL DECISION SYSTEM* - DECISIONAL CLOUD

The generic term "formal decision system" will designate the set of organic and functional structures on one hand, the set of rules and formal procedures on the other hand that define the DECISION FUNCTION in the firm or part thereof concerned with the intervention process in an institutional way.

The effectiveness of the formal decision system is measured by the number of real decision problems it allows to undertake and successfully fulfill.

The above definition implies that in the utopian case where sufficient information would be available to achieve perfect knowledge of the firm, an effective formal decision system would permit automatic guidance of the firm.

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* this is not the notion of decision system as it is usually defined in Systems Analysis. As considered here the decision system is not a model (as is in Le Moigne, Ref.4) but only an attribute of the firm that is undistinguishable from it.

In reality, the economic firm is a complex hierarchical structure inside which an observing actor informed as he might be on the system, suffers a lack of information and is subject to uncertainty : he has, at the same time, a global perception of the firm and the feeling that he does not master it in its details. As a consequence, some "organisational noise" is generated by the functioning of the formal decision system (see H. Atlan, Ref.1). This noise feeds a parasitic decision system operating in parallel to the formal decision system, or, to be more precise, wrapping it up in a decisional cloud.

Whereas knowledge of the formal decision system is relatively easy to achieve in its mainline (by means of organisation and procedures manual, interviews of key actors of firm etc), knowledge of the parallel system is much more difficult and requires a long term participation in the everyday life of the firm.

One of the key conditions to success of our intervention metamethod will be that it apply both to the formal decision system and the decisional cloud.

DECISIONAL SPACE - ABSOLUTE AND RELATIVE DECISION SPACE OF AN ACTOR

The decisional space of the firm is defined as the set of all possible and imaginable solutions the firm could adopt with its actual decision space.

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The absolute decision space of an actor at some particular moment is defined as the largest possible subject of the decisional space of the firm that this actor can perceive given the physical constraints that prevent him from having both a global and detailed view of the decisional space of the firm as a whole.

The relative decision space of an actor at some particular moment is defined as the subset of the absolute decision space that can be perceived by the actor when his subjective attributes are considered together with the physical constraints.

DECISION DOMAIN

It is the typological description of decision problems that are usually solved in the organisational entity of the firm which is the object of the intervention.

PROBLEM

Our concept of a problem was adopted from a definition given by Landry, Pascot et Briolat (Ref.9).

A problem is "an actor's subjective representation when he is confronted with a reality which he perceives as non satisfactory".

The definition is quite well adapted to a complex reality where "putting facts in order" can be nothing more than an attribute of the observer.

3.2. "Between crystal and smoke" (ref.I)

As was mentioned above, one of the conditions of success of our intervention metamethod depends on its implementation to the formal decision system and the decisional cloud at the same time in order to form an adequate decision system for the firm.

This query is rendered easier by referring to two organisational systems that are interesting to study because, in some sense, they are caricatures of reality :

- bureaucracy or "super organisation", a vertical, strongly hierarchical system,
- adhocracy* or "antiorganisation", a teleonomic self-organising system.

Between these structures representing rigidity and permanent agitation respectively lies, in theory, an organisational structure which conjugates advantages of both while attenuating their defaults.

This optimal structure is, alas, not feasible in practice but it can still be a focus point for the intervention consultant who should help the decision maker contribute to the shift of his firm from a bureaucratic system to a system promoting the dialectic process between bureaucracy and adhocracy.

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* See Ref.7. Adhocracy is a word that was invented by the american futurologist Alvin Toffler to designate a system where modules assemble in a temporary fashion in order to respond to problem solving requirements of an unstable environment.

3.3. New Paradigms and Change defining Axes

The shift from a bureaucratic system to a system favouring the dialectic process between bureaucracy and adhocracy signifies the necessity for a change of paradigm.

When the decision problems of the firm become too complex to be solved with its usual decision systems, the need for new concepts and paradigms becomes urgent and predominant.

Characteristics of paradigm

time axis

FIRM CHARACTERISTICS	FORMAL DECISION SYSTEM	DECISION CLOUD
Stability ; environment is closed and static	Bureaucracy	"pre-adhocratic" fuzz
Turbulence ; environment is open and dynamic	Dialectic process between bureaucracy and adhocracy	"post-adhocratic" fuzz

Fig. 3.1

A change of paradigm is achieved when informal modes of functionning belonging to the decision cloud are transformed into formal procedures that join the formal decision system.

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In other words, this phenomenon could be expressed as an application of "order by noise principle" (Ref.1) : noise generated by the decisional cloud gives birth to some "order" represented by new rules and formal decisional procedures of the firm.

By this process, innovation is assimilated and absorbed and becomes part of the "identity and legitimacy paradigm" of the firm (Ref. 12).

The above described process can be favoured by defining axes for change within the firm. They should be both suggestive of new directions to take, stimulating for the firm's organisation activity and generators of open problems (problems that are dynamical and with ever negociable boarders). These axes should make use, in other words, of the intervention consultant's creativity as was mentioned in the fundamental postulate for intervention.

In our particular representation and modeling system they are :

(i) transformation of the formal decision system and the decisional cloud in order to decrease their deficiences,

(ii) fruitfull change of decisional space of firm and actors,

(iii) exploration of unknown and hidden regions of decison domain,

(iv) acting upon actors' individual rationalities so that synergy to organisational goals is increased,

(v) introduction of a decision process method audit working on trial and error learning feed-back loops (Ref.6).

The above axes are not mutually exclusive ; implementation of one has influence on at least some others. For further developments one should consult the original thesis (Ref.13).

3.4. A normative pseudo-arborescent model

The term DYNAMIC PRINCIPLES FOR CHANGE will designate certain rules of conduct that the intervention consultant could decide to make active in the process of some particular intervention.

DYNAMIC PRINCIPLES FOR CHANGE answer the question "what should be done ?" to handle the particular intervention. They underlay any action the intervention consultant will undertake during the intervention process but remain latent and hidden to other actors of the process.

The term ACTION GUIDES will designate certain propositions which play the role of guidelines in putting Dynamic Principles for change into work in the course of a particular intervention.

Unlike Dynamic Principles for change, Action Guides are presented to the main actors of the decision processes under study. They are discussed, tested and improved constantly in the course of the intervention process.

They could be considered as strategies for the application of Dynamic Principles for change to the particular intervention.

The term CONCRETE PRESCRIPTIVE ACTIONS will designate all actions that an Action Guide shows as directly applicable and operational.

CONCRETE PRESCRIPTIVE ACTIONS answer the question "what do we intend to do ? " in a particular intervention.
Thus, they are solutions proposed for implementation and their introduction in the decision processes under study aims to improve the effectiveness of the processes.

Concrete prescriptive actions can be considered as the tactics the intervention consultant intends to use for making strategy (Action Guides) work.

Concrete Prescriptive Actions, just as Action Guides and Dynamic Principles for change, stand before the implementation process that will be developed in practice. They are prescriptive and not descriptive.

Relations among these three objects are hierarchical :

- determination of Action Guides depends on the particular Dynamic Principle for change under consideration,
- determination of Concrete Prescriptive Actions depends on the particular Action Guide under consideration.

Nevertheless, Dynamic Principals for change being general and rather vague as far as their application to a concrete intervention is concerned, a certain amount of redundancy cannot be excluded. As a consequence, the same concrete Prescriptive Action could be obtained by applying two different Action Guides. This is by no means a drawback though: important aspects of the intervention situation are stressed by partly redundant Action Guides and Concrete Prescriptive Actions.

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This redundancy feature should not be excluded from modeling. As a result of this requirement, the graphical representation of the above three hierarchically related concepts is not a true arborescent graph but a graph that will be called a three-level pseudo-arborescence.

It is represented as follows :

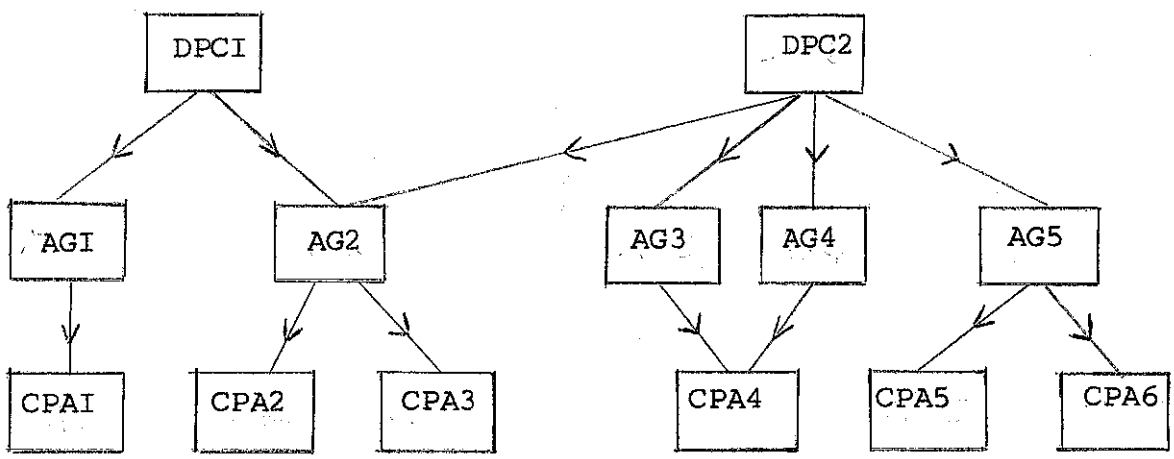

Fig. 3.2.

Note the pyramidal aspect of this relationship :

- some Dynamic Principles for change at the disposal of the intervention consultant,
- several Action Guides springing from each Dynamic Principle for change,
- numerous Concrete Prescriptive Actions springing from each Action Guide.

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Fig.3.2. illustrates the redundancy we discussed above : Action Guide AG2 is generated both by Dynamic Principle for change DPC1 and DPC2. Likewise, Concrete Prescriptive Action CPA4 is generated both by Action Guide AG3 and AG4.

Shifting from one hierarchical level of the pseudo-arborescence to another is neither an obvious nor immediate motion and must be considered as an open problem on its own.

In general, it might be said that trial and error processes are predominant in the shift from a Dynamic Principle for change to an Action Guide. Negociation processes are predominant in the shift from an Action Guide to a Concrete Prescriptive Action.

This pseudo-arborescent being a normative model we concentrated on building it in such a way that it be nontrivial and yet not too complicated to make it inaccessible in practice.

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4. PUTTING THE PSEUDO-ARBORESCENT MODEL TO WORK-ARTICULATION WITH AN INTERVENTION IMPLEMENTATION MODEL

4.1. Use of pseudo-arborescent model

The pseudo-arborescent model should be of dual use to the intervention consultant :

- help in a particular intervention,
- assist him in intervention assessment in general and construction of a posteriori analysis that make his intervention experience "wealthier and healthier"

In order that they be useful in a particular intervention, Dynamic Principles for change at the disposal of the intervention consultant should be sufficiently rich and suggestive so that the final actions be effective and efficient.

An initial core of Dynamic Principles for Change is presented. It is neither limitative nor absolute but should evolve at the same time as the consultant's intervention experience. The reasons for choosing this particular initial core are given in the thesis (Ref.13).

PRINCIPLE 1 : Give systematic and formal ways of rationaly determining the right time to engage in irreversible decisions,

PRINCIPLE 2 : Install a real-time decision system based on learning feed-back loops,

PRINCIPLE 3 : Set up a method audit on decision processes of the firm which would be based on evaluation of decision process rationality,

PRINCIPLE 4 : Promote plasticity of organisational structure,

PRINCIPLE 5 : Act in order to decrease inequalities in personnel competence and improve future perspectives,

PRINCIPLE 6 ; Introduce modularity in decision processes,

PRINCIPLE 7 : Act in order to facilitate identification between firm objectives and employees' personal objectives,

PRINCIPLE 8 : Systematically choose minorities that will act at different levels of the organisation as promoters of modern systems approach methods to solve decision problems.

A stock of Action Guides and Concrete Prescriptive Actions obtained via a posteriori studies of real interventions could also have a "historical" value for future interventions.

Implementation of the pseudo-arborescent model during a particular course of intervention is achieved through the successful fulfilment of a number of stages:

- collection of information on the decision problem and its environment,
- search and selection of Dynamic Principles for change to render active in this particular intervention,
- determination and evaluation of Action Guides springing from selected Dynamic Principles for change,
- setting up negociation processes among actors of decision problems under study in order to determine modalities of application of Action Guides to a particular situation and obtain thus concrete Prescriptive Actions.

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Further details about those stages are given in the thesis (Ref.13).

4.2. Articulation with Lewin-Schein model

Correct diagnosis and a proposed solution that is considered to be efficient and effective by the intervention consultant and the key actors in the decision processes are not the only prerequisities to successful intervention. Even more important is a satisfactory implementation of the proposed actions with constant checks on their veracity in practice.

The pseudo-arborescent model alone, being normative and prescriptive, does not allow for a satisfactory resolution of implementation problems.

A complement is needed which is found in the articulation of the pseudo-arborescence with the Lewin-Schein model mentioned in 1.1. This articulation is achieved through the "unfreezing" phase of the Lewin-Schein model as can be seen in Figure 4.1.

This "unfreezing" phase can be decomposed in three stages :

(i) Exploration

(ii) Initialisation

(iii) Diagnosis

(i), (ii) or (iii) could imply a feed-back loop towards concrete prescriptive actions, (A2 to C1), with changes either in choice of these actions or action reformulation or priority restructuring.

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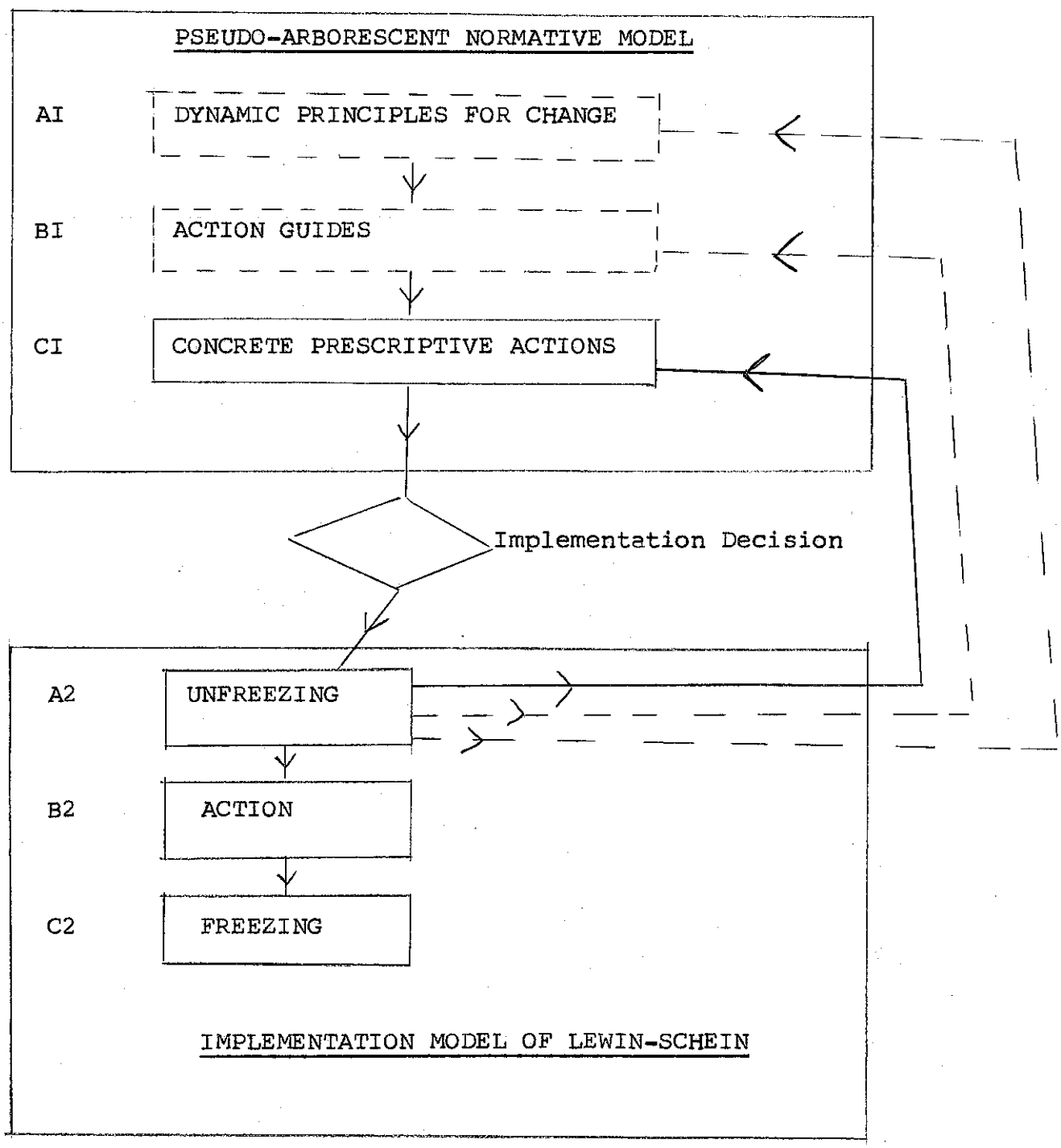
The feed-back loop can be more or less extended (A2 to C1 or A2 to B1 or A2 to A1). This depends on amplitude of deviation between recommended and real action.

Fig. 4.1



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4.3. Broadening the problematique - conclusions

Implementation of concrete prescriptive actions in some part of the organisation may have influence on :

- organisational processes in which this subset of the organisation is involved
- relationship of actors,
- the decision domain of intervention entity,
- the decisional space of the firm and the absolute and relative decision spaces of actors,
- the decision system of the organisation.

All these effects are, in fact, intimately related.

It is therefore necessary to elaborate methods that help study the influence of concrete prescriptive actions on above mentioned points. This would allow a before hand appreciation of results and impacts of such actions and contribute to successful handling of intervention.

Unfortunately the intervention **consultant usually** bumps into the problem of having to abandon intervention process long before the actual implementation has started to develop and yield results.

Even if that is not the case, it is often a problem to associate directly the suggested concrete prescriptive actions to real-world results that come up long after.

The application of a hybrid model such as the one presented in 4.2 allowing for corrective feed-back loops between concrete prescriptive actions and real-world results could be an answer to this problem.

Study of such feed-back loop problems has, to our knowledge, not yet been undertaken and can be considered as belonging to a broader problematique of intervention on decision problems of the firm.

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A more complete bibliography is given in the thesis (Ref.13)

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