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Learning and Acting in project situations through a meta-method (MAP) a case study: Contextual and Situational approach for Project Management

Governance in Management Education

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ABSTRACT

The paper introduces the underlying principles and the general features of a meta-method (MAP method – Management & Analysis of Projects) developed as part of and used in various research, education and professional development programmes at ESC Lille. This method aims at providing effective and efficient structure and process for acting and learning in various complex, uncertain and ambiguous managerial situations (projects, programmes, portfolios).

The paper is organized in three parts. In a first part, I propose to revisit the dominant vision of the project management knowledge field, based on the assumptions they are not addressing adequately current business and management contexts and situations, and that competencies in management of entrepreneurial activities are the sources of creation of value for organisations. Then, grounded on the new suggested perspective, the second part presents the underlying concepts supporting MAP method seen as a 'convention generator' and how this meta-method inextricably links learning and practice in addressing managerial situations. The third part describes example of application, illustrating with a brief case study how the method integrates Project Management Governance, and gives few examples of use in Management Education and Professional Development.

Key words: epistemology, meta-method, praxeology, learning, acting, modelling, theory of convention, governance, management education

INTRODUCTION

The paper introduces the underlying principles and the general features of a meta-method (MAP method – Management & Analysis of Projects) developed as part of and used in various research, education and professional development programmes – Masters, MBA and PhD in Project Management – at ESC Lille. This method aims at providing effective and efficient structure and process for acting and learning in various complex, uncertain and ambiguous managerial situations (projects, programmes, portfolios). This method was developed by Roger P. Declerck (founder, CIMAP, ESC Lille Research Centre in Project, Programme, and Porfolio Management) based on his research and consulting experience [1]. In this paper, I use the word 'project' for 'project', 'programme', and 'portfolio as they are entrepreneurial activities [1].

The paper is organized in three parts. In a first part, I propose to revisit the dominant vision of the project management knowledge field, based on the assumptions they are not addressing adequately current business and management contexts and situations, and that competencies in management of entrepreneurial activities are the sources of creation of value for organisations. Then, grounded on the new suggested perspective, the second part presents the underlying concepts supporting MAP method seen as a 'convention generator' and how this meta-method inextricably links learning and practice in addressing managerial situations. The third part describes briefly how the method integrates Governance, which is performance and accountability in decision-making and management, one of the key issues in management education and professional development.

REVISITING THE PROJECT MANAGEMENT FIELD: BEYOND THE POSITIVIST

MIRROR

PM knowledge & competencies: supporting strategy implementation in complex environment

In the last forty years, project management has evolved from operational research techniques and tools to being an accepted discipline of management to manage organisations [8], [9], [15], [28] and manage coroporate strategy [65], [43]. Projects are vectors of strategy [34] and position an organisation to deal with its complex environment [69]. Thus, through project management, strategic management

becomes the management of irreversibility [22], concentrating on the ecosystem's project/organization/context, operation/ organization/ context and their integrative management [21]. Projects act as vehicles to develop competencies (individual, team, and organisational) when modifying its environment and thus lead to competitive advantage and value creation. The Recent research suggests that increased competency in project managers, teams, or organizations (maturity), leads to efficiency in performance and a more effective project performance, thus, a more successful overall organization [20], 48], [27], [26], [66].

On the question of developing competence, the traditional view (referred to as 'have' or 'quantitative perspective' in this paper) applies body of knowledge to known situations to solve problems. However, this is inadequate when responding to unknown situations in a dynamic information-based society [58], [64]. This is referred to as 'be' or 'qualitative' perspective. Consequently, education and professional development should adopt this later perspective. This trend is reflected in the dynamic development of project manager's competencies in project management [20].

Project Management as a Complex Integrative Field

I will now provide theoretical insights into how project management is understood as an 'entrepreneurial activity (vs. 'operational' activity), acting as a place for acting and reflection between organisation's mission and its value creation. This is in the realm of complexity [53]

The world sees project management from a positivist perspective (set of methods and tools interacting with other fields of management and engineering). This leads to linearity and over simplification when attempting to solve complex problems and is inadequate to explain the true nature of project management. Further, there is a need to question the appropriateness of the current paradigms [36].

I concur and argue that project management is a complex discipline as it deals with complex reality. Citing law of requisite variety [3], which states that n+1 dimensions to control a complex system with n dimensions, I cite the following theorem and principles:

- The Conant-Ashby Theorem: Every good regulator of a system must have a model of that system. Implication: The principle prompts one to think through and create a model of what you are teaching / managing / guiding.
- The Darkness Principle: Even though a system is never completely known, it can be managed effectively (black box theory)
- The Redundancy of Resources Principle: To minimize the effect of disturbances or noise, the system requires backup systems of critical resources (human and machine) in order to maintain stability. Implications: Plan actions before disturbance or noise happen, because they will.

Thus, my purpose is to defend the proposition that project management has a 'raison d'être' in itself; it is both a discipline and an art and contributes to a better understanding of the integrative epistemological position proposed, in which is the very nature of project management.

To develop sound theory for project management research and professional development, I provide insights into epistemological foundations of project in brief.

Scrutinizing the concept of project

Drawing from Leroy [39], I consider 3 definitions of project management which reflect different perspectives towards its understanding:

- Instrumental Perspective Project as a temporary endeavour to create unique product or service [50]
- Cognitive Perspective human capital and financial resources organized in a novel way to undertake unique scope of work within time and cost constraints; achieving quantitative and qualitative objectives [65]
- Political Perspective actions limited in space and time, inserted and interacting with politico-socio-economic environment; tending towards goal progressively refined by dialectic thought and reality [21], [22].

These perspectives show the polysemic concept of project [6] and are traced to two underlying visions.

The first is the development of project management along with constitution of codes of practice and standards (emphasis on certification process for people; peer recognition accompanying theoretical knowledge) which is based on positivism.

The second is through projects, man builds reality and as highlighted by authors like Declerck et al [22], the management of projects by its mode of deployment within the ecosystem project/firm/context implies a systemic vision, an 'intelligent' action, 'ingenium¹', this mental faculty which makes possible to connect in a fast, suitable and happy way the separate things as stated by Le Moigne [37. Thus, the evolution noted in the use of project management and/or management by projects [30] and its structuring characteristics suggests a constructivist vision (Cognitive Constructivism with Jean Piaget and Social Constructivism with Lev Vygotsky).

Tensions and paradoxes in project management

These two visions are consubstantial with the concept of project management in the current organisations. Boutinet [7] posits that the organisations not recognising this paradox lends them to drift towards a totalitarian or a technicist approach (simplification). The traditional logic was concerned with discipline of the mind and controlled sets of steps. This can, however, twist the rational one in the direction of rationalizations, artificially giving to reality desired intelligibility. The increasing complexity of our environments means that the opportunities to use this traditional kind of logic are increasingly random; the relevance of the recourse to the paradox today is precisely related to the fact that it constitutes a suitable figure to think through the 'fuzzy', uncertain, and even the strangeness of our intentions, that is, the heuristic framework of our projects.

Based on this polysemic nature of the concept and the underlying consubstantiatial positivist and constructivist perspectives, I present my epistemological position on project management.

An epistemological perspective for project management

¹ INGENIUM: "For the ingenium was given to human to understand, i.e. to make" G Vico Thus characterized it since 1708 the 'Method of the studies of our time', method or rather advance - these ways which we build while going - what restores the vast contemporary project of a New Reform of Understanding. Deploying all faculties of the human reason, the 'ingenium' - this "strange faculty of the human mind which allows him to co-join", i.e. to give direction to its experiments of the "world of the life" – makes us understandable of these multiple interactions between knowledge and action, between including/understanding and making, which we recognize in our behaviours within the human societies. With collective resignation to which still too often invite us scientific knowledge sacralising reductionism and deductivism, 'sciences of ingenium' oppose the attractive capacity of the human mind to co-join, to understand and invent by forming projects, with this 'stubborn person rigour' to which already testified Léonard de Vinci.

After Polanyi [54], I propose an alternative epistemological perspective both to positivism and constructivism. Not separating personal judgment from scientific method, I argue that in project management, knowledge creation and production has to integrate both classical scientific aspects and fuzzy or symbolic aspects. Further, I argue that the 'demiurgic' characteristic of project management involves seeing this field as an open space, without 'having' (Have) but rather with a raison d'être (Be), because of the construction of Real by the projects.

This field includes both quantitative aspects (Have), dependent upon the positivist paradigm, where people have few degrees of freedom (operational research, statistical methods, bodies of knowledge, application of standards, best practices, seen as truth), and qualitative aspects (Be), dependent upon the constructivist paradigm where people have many degrees of freedom (learning, knowledge management, change management, systemic approaches, etc.). However, some of these aspects are linked together (eg. Creation and evolution of standards from theory of convention).

Thus, I envision project management as an integral function: the knowledge field is made up of differential elements, each of them being able to be defined (eg. cost control, scheduling, etc.). Project management is both an art and a science², with dialectic AND integrative dimensions (close to the 'critical-rationalist' and 'interactionist' approach of Popper), and thus according to the two epistemological approaches:

- the positivist epistemology (materialist quantitative Have): "the relation of science to art may be summed up in a brief expression: from Science comes Prevision, from Prevision comes action". (Comte [19]: Chapter II, 43)
- the constructivist epistemology (immaterialist qualitative Be), with two hypotheses of reference as underlined by Le Moigne [37]:
- The phenomenological hypothesis the cognitive interaction between the object or the phenomenon to be known and the subject knowing forms at the same time the knowledge of the object (in 'organising the world') and the mode of development of knowledge by the

² According to my position the debate between Protagoras and Plato (Doxa – "Man is the measure of all things" (Protagoras) vs. Episteme, Sophia – "Ideas are the Real" (Plato)) should be considered as a 'symbol' and as a starting reflective point to move through integration at higher level of understanding and solve the apparent opposition

subject (in 'the intelligence organising itself'). This hypothesis associates to the strict design knowledge (the cognizable reality is a phenomenological reality, which the subject experiments) an active conception: the knowledge which the subject builds by its experience organises simultaneously the method of construction of this knowledge, or his or her intelligence.

 The teleological hypothesis: the intentionality or the finality of the knowing subject, according to its decisive role in the construction of knowledge (phenomenological hypothesis), must be taken into account.

Most research in organizational learning, learning organizations, and knowledge management treats knowledge which people, teams, and organizations have; a 'postivist epistemology'. This perspective does not see knowing (understanding) as 'ingenuim' [37] therefore tending towards 'constructivist epistemology'. The 'positivist epistemology' tends to promote explicit over tacit knowledge, and individual knowledge over team or organisational knowledge.

This integrative epistemological approach for project management calls for better understanding of organizations by treating explicit, tacit, individual, and team/organisational knowledge as being distinct forms - inseparable and mutually enabling.

In the next part of this paper, I present acting and learning in project situations through modelling by presenting the underlying concepts of MAP method. These observations are grounded in the research undertaken by CIMAP at ESC Lille.

MAP METHOD AS 'CONVENTION GENERATOR':

'MODELLING TO UNDERSTAND' THAT IS TO DO INGENIOUSLY!

In project management learning and practice are integrated (see above the notion of 'ingenium'). To facilitate this praxis (praxeology in action) in complex situations [37], a specific meta-method (MAP method) built both upon and supporting research, education and experience (science and art) has been developed to understand how to cope (learn and act) with complex management situations?

The MAP method provides structure and process for analysing, solving and governance of macro, meso, and micro projects. It is founded on the interaction between decision makers, project team, and various stakeholders. It is a place of 'social practice' [18] and a place providing the individuals, teams and stakeholders with models: 'representations' [70], conventions and symbols [32].

Meta-modelling theoretical roots

This approach is being progressively developed through heuristic process and is based on sound organizational frameworks. I can say MAP Method is a contextual structure and process that:

- Facilitates this praxis through a specific meta-method, one of the underlying paradigms being that there is a co-evolution between the subject/actor and his or her environment. This involves inseparability between the subject and the object in this observation-action process. This observation-action is related to an epistemo-praxeologic cognition through an observational chain (perception of what is true or wrong epistemological subjectivity), a decision chain (decision made founded or unfounded pragmatical subjectivity), and an effect chain (action fulfilled feasible or unfeasible praxeological subjectivity). This epistemo-praxeologic cognition involves both partial subjectivity AND partial objectivity, congruent with our previous alternative epistemological position.
- Provides a privileged place for individuals and organisations to act and learn in an environment which integrates explorative and exploitative learning [5]. From the efficiency and effectiveness standpoint, a project team acts as a temporary dissipative structure [22], generating first entropy (that is knowledge) creating knowledge with many degrees of freedom, then applying it (entropy reduction by reduction of complexity [5]) in the initial stages of a project.
- Enables to generate a specific convention (configuration of order) and some kind of stability to cope with uncertainty and ambiguity in a given project's complex situation. The meta-method helps to create a coherent or dissonant framework of symbols, promoting dynamic management practices which are creating adequate initial conditions for decision-making (and thus performance), and transparency (and thus accountability) while being conscious of and accepting rational voids.

Three main theoretical areas, aligned with our epistemological position exposed earlier in this paper are considered here. This meta-modelling approach is grounded on a Praxeological epistemology, 'N-Learning' vs. 'S-Learning' dialectic, and Theory of Convention.

Praxeological epistemology

In project management learning and practice are integrated into praxis – praxeological approach. Praxeology is "The science of human action that strives for universally valid knowledge. In all of its branches this science is a priori, not empirical. Like logic and mathematics, it is not derived from experience; it is prior to experience. It is, as it were, the logic of action and deed" (Von Mises [67]: Chapter 1 §6). Praxeology is the study of human action and conduct. It is concerned with the conceptual analysis and logical implications of preference, choice, means-end schemes, and so forth.

N vs. S-Learning

I draw from Boisot [5] and his stance on the two-step process for emergence of knowledge assets – creating knowledge and applying knowledge to foreshadow my juxtaposition of N and S- Learning. In neoclassical learning (N-Learning) knowledge is considered cumulative and a stabilizing process which leads to fossilization of knowledge assets. In Schumpeterian learning (S-Learning), knowledge is progressive with successive approximation (not necessarily linear) leading to better understanding of underlying reality [5] S-Learning is more complex than N-Learning integrating both certainties and uncertainties, and requires an 'edge of chaos' culture [5].

Theory of Convention

The Theory of Convention offers a theoretical framework and tools to understand the systemic dimension and dynamic structure of a meta-model seen as a special case of conventions. Gomez et al. (2000) outline the main characteristics of the Theory of Convention: starting with the notions such as 'deep structure' [56] and 'system structure' [59], [61].

Three mains notions are discussed before they propose a definition of convention: uncertainty, "rationalization" and the process of justification of the behaviour to cope with uncertainty, and rational voids (systems of non-justified beliefs). The rational void is "surrounded by a screen of information which both provides individuals with signals that they share the same assumptions, and also distracts

their attention from questioning it" (Gomez et al[32]:700). These signals are said to operate also as symbols.

Convention is defined as "set of formal relationships among the elements in a symbolic system which can be modelled" [40]. It associates non justified norms (rational void) with screen of symbols (interrelation between objects, discourses and behaviours).

I now connote to the concept of convention as described by Gomez [31] and draw the following implications. From this several important consequences can be drawn and discussed [32]. Among the most important on which are based a meta-method seen as a 'convention generator':

- An individual is within a conventional system of rationalization. The observed behaviour is situated in the screen of symbols; linked with some others behaviours or objects but not the totality of them. This notion of situation is crucial to understand the dynamics of conventions.
- Conventions are stable but not static patterns. Conventions evolve, modify themselves, and sometimes disappear.
- Within any convention, conformism allows individuals to escape the perils of uncertainty.
- Conventions are never completely isolated. If indeed an alternative provides a more coherent set of symbols, the individual can spontaneously escape ambiguity and potential uncertainty by behaving according to this one.
- The individuals through organisational learning process [2] either conform to new conventions; recognising only coherent symbolic signals or can exhibit non-conformist behaviour as the number of dissonant signals the individual perceives increases.
- Individuals through their actions can only contribute to the evolution of convention. This gives precision to the role and the limit of managerial action in organisations. Managers do not choose to act in one convention over another, but rather, as individuals, to escape the inhibiting effect of uncertainty. Once again, for any individual, the fact that the diversity of conventions allows some room for doubt and ambiguity is paradoxically the fact which gives them some freedom for action.

• Convention highlights in particular the important task of symbolic management. This allows us to better understand that management practices can also be a way of creating coherence, or creating gaps between the hidden and the visible, which leads to dissonance; which is management's prerogative

Meta-modelling elements

Project situations and organizational ecosystem ground for acting and learning

Project situations vs. operation situations. According to Declerck in Ansoff et al., [1] every organization acts according to two fundamental modes:

- Operational mode, aiming at the exploitation of competitive advantage and current position on the market and providing profits and renewal or increase of resources
- Entrepreneurial mode, or project mode, focusing on the research of new position and new competitive advantage, consuming money and resources.

And, to ensure their sustainability and development, all organizations need to combine both modes.

Thus in project management context we have to face two types of activities. Declerck (in Ansoff et al.,

[1]) emphasizes the main characteristics of these activities (Table 1). The focus here is on these two types, although in reality activities may be a blend of these two pure types.

Operations	Projects (entrepreneurial activities are assumed here to be managed using the project
	'form')
Ongoing and repetitive activities, being prone to influence of numerous factors. The factors of influence are mainly internal (endogenous), rather than environmental, and they can be manipulated by the operation manager. The environmental factors explain only a low part of the fluctuation of outputs. the inputs present random variations. It is possible to measure and to estimate the probabilities associated to these variations. The variation of inputs can be made statically stable. Future effects can be predicted with a specified margin of error. Non-usual variations coming from perturbations external to the operation lead to slight penalizing and never to disaster. Operations are reversible processes: perturbations can be detected, the nature of these causes can be identified, and these causes can be eradicated. The reversibility of operations can occur within economically acceptable limits. Operations may interact with the actions of the observer.	Non-repetitive activities (one –shot). Decisions are irreversible. Projects are subjects to multiple influences. The main influences come from environment (exogenous) and may vary considerably. The decision-maker cannot usually handle an important number of variables (exogenous variables). It is very tough to measure the effects or these influences. The project is generally not in statistical stability, and it is not possible to associate probabilities to the effects one tries to measure. A "bad" decision and/or a non controllable influence of a major event may lead to catastrophic result.
To summarize, operations involve:	Projects involve:
Planed actions	Creative actions
Masked actors	Unmasked actors
Process Rational	Praxis Para-rational
Algorithmic	Mosaic
Angorithmic	Historic
Cooperation	Confrontation
Stable and making one feel secure	Rich, ambiguous, instable
Stable and making one reel secure	

A consequence of this, is the recognition of various management situations (from operations to

complex projects/programmes) involving the use different management practices [21] illustrated in

Table 2.

Main acting mode			Projects		
Epistemology	Positivist – 'Have'		Constructivist – 'Be	- 'Be'	
Situations	O Deterministic	P1 Probabilistic Statistical stability	P2 Statistically unstable	P3 Complex	
Management actions types	Implementation of controlled management actions	Repetition of Management actions already working in the organization	Transfer of Management actions that work in other business conditions	Experimentation of new Management actions	
Management practices	Classic Management practices: operations management, statistical methods, project control, quality management			'New' Management practices: change management, dynamic system design, chaos management, decisions under uncertainty and ambiguity	
Models	Analytical	Stochastic Statistical	Statistical control	Qualitative numeric	
Logic	Deductive/predict ive	Deductive/predict ive Inductive/projecti ve	Fuzzy or impossible	Computable	
Decision	Certainty	Stochastic Risk Statistical Risk	Uncertainty	Unpredictability	

Table 2: various management situations and practices

Organizational ecosystem. An ecosystem is defined as "the complex of a community of organisms and its environment (biotope) functioning as an ecological unit" (Merriam Webster dictionary). Here the biotope is the environment includes sub-system that is defined by decision makers.

Referring to 'intelligent' actions, and 'knowledge development', projects involve praxis, which becomes an action oriented to meet a goal that is context and environment specific. Understanding such a dynamic relationship between information, knowledge, learning and acting leads to a systemic perspective.

Considering the dynamic aspect of the ecosystem project/context three propositions can be made:

- a project starts with a simulation then continues with series of dissimulations;
- a project is a place for spontaneous generation of positive feedbacks;
- a project is a dialectic 'complexification/decomplexification'.

The whole dynamic of the ecosystem and the information generated can be represented as follows (Exhibit 1):

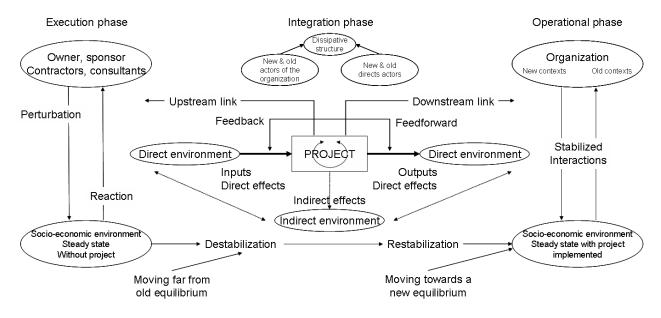


Exhibit 1: Morphogenesis of ecosystem and information flows

Learning dynamics and praxis

This includes the learning and knowledge management aspects at individual, team and organisational levels. Increasing competencies is assumed leading to improved performance [20]. As mentioned above competencies (both individual, team and organizational) are at the source of competitive advantage and the creation of value [41]. Drawing from Wenger, McDermott and Snyder [72], I compare the characteristics of project team, community of practice, and Ba platform for the knowledge creation process [45]. They are summarized in Table 3.

Project Team	Community of Practice	Ba
Members practice their jobs and learn by participating in the project team	Members learn by participating in the community and practicing their jobs	Members learn by participating in the <i>Ba</i> and practicing their jobs
Place where knowledge is created, where members learn knowledge that is embedded, and where knowledge is utilized	Place where members learn knowledge that is embedded in the community	Place where knowledge is created
Need of energy (forming the team) and then learning occurs	Learning occurs in any community of practice	Need of energy in order to become active
Boundary is set by the task and the project.	Boundary is firmly set by the task, culture, and history of the community	Boundary is set by its participants and can be changed easily. Here-and-now. Created, function, disappear
Membership fixed for the project duration (temporary nature). May vary depending the phases of the project.	Membership rather stable. New members need time to learn and fully participate.	Membership not fixed. Participants come and go.
Participants may relate or belong to the project team for the duration of the project but may belong or relate to the operational/functional organization (Department, contractors, suppliers, etc.).	Participants belong to the community.	Participants relate to the <i>Ba</i> .

Table 3 Putting in perspective project team, community of practice, and Ba

To understand the specificity created by the project environment and project team as far as learning is

concerned, I synthesize some of the key perspectives in Table 4.

Epistemology	Positivist – 'Have'	Constructivist – 'Be'
Main acting mode / situations	Operations $(O \rightarrow P1 \rightarrow P2 \rightarrow P3)$ Projects	
Knowledge Management	Codification. Explicit knowledge. Linear thinking. Knowledge market.	Personalization Tacit knowledge Dialectical thinking: "synthesizing dialectical thinking", aiming at identifying contradiction and resolving it by means of synthesis or integration, from "compromising dialectical thinking", focusing on tolerating contradiction
Organizational Learning	Single-loop learning Information theory (knowledge as formal and systematic-hard data, codified procedures, universal principles)	Double-loop learning Information theory (Nonaka, 1991, Boisot, 1998) System dynamics theory (Senge, 1990a)
Learning Organization	Neoclassical learning (N- Learning), knowledge is considered cumulative. (Boisot, 1998)	SECI cycle, <i>Ba</i> , Knowledge assets, needs for a supportive organization. (Nonaka, 1991), Learning Organization (Senge, 1990b) Schumpeterian learning (S- Learning), change is the natural order of things. (Boisot, 1998)

 Table 4: Synthesis of two perspectives regarding Knowledge Management, Organizational

 Learning and Learning Organizations

From this table, it is clear that projects as such are learning organizations or learning places. Such project-based learning needs to integrate the two perspectives ('Have' and 'Be' or 'operations' and 'projects' acting modes), as there is a need for a blend of creative or exploratory learning and application or exploitative learning (Boisot [5], p. 116). From the efficiency and effectiveness standpoint, projects first generate information and knowledge with many degrees of freedom (creating complexity) and applying it in the initial stages of the project (reducing complexity).

At a higher level, praxis within projects is fascinating as the teams are engaged in solving a unique conundrum – to what extent must the past information/knowledge be available to complete the project?, and to what extent must knowledge be emergent/learned from the project tasks?

The consequence at the praxis level is twofold. The first relates to knowledge at the individual, team, and organisational levels. Examples are development of professional certifications and maturity models. These are perceived as social constructs and their evolution is concurrent with experiences

gained by users [9]. The second relates to 'Be' side, the need of more creative competence. Examples are flexible frameworks, and professional certifications which include personal traits. Organisational structures are important in this.

Consider now the organization of learning and the necessary supporting structures. Each organisation builds its own learning organisation system according to project specificity and the underlying methods, tools, techniques, and systems leading to design of effective strategy implementation and project/programme governance.

The general environment (tasks, people, stakeholders) also influences learning [73]. The integration of these different elements leads us to propose the following model (Exhibit 2) representing general ecosystem and the praxis (learning & acting) subsystem. The systemic and dynamic model enables to deal with different time horizons (from short-term to long term).

This model suggested will have to allow the design for learning & acting answering three series of objectives:

1. The objective of individual learning; bridging the gap between their present and expected level of performance by acquiring PM certifications such as PMP according to their projects

2. The objectives of team learning; developing team competencies) and has a great influence on both individual performance and organizational performance [71]. It is the link between individual and organisational learning and between project team and operation team.

3. The objectives of organizational learning: they are depending on the disturbances in organizational learning [55] and on the degree of maturity reached by the organization.

The design for learning and acting has to provide coherence between the different learning and acting levels. It integrates both single loop and double loop learning, considering contingencies, organisation characteristics, theories, methods and tools.

The designed framework for learning and acting (praxis) is presented Exhibit 3. Arrows are representing the links between individual, team and organizational levels.

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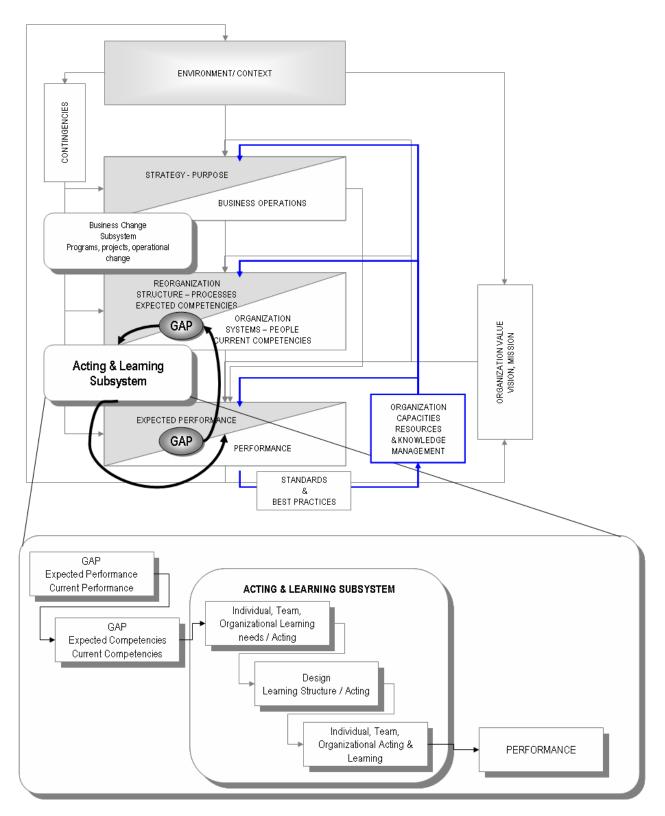


Exhibit 2: General ecosystem and praxis (learning & acting) subsystem

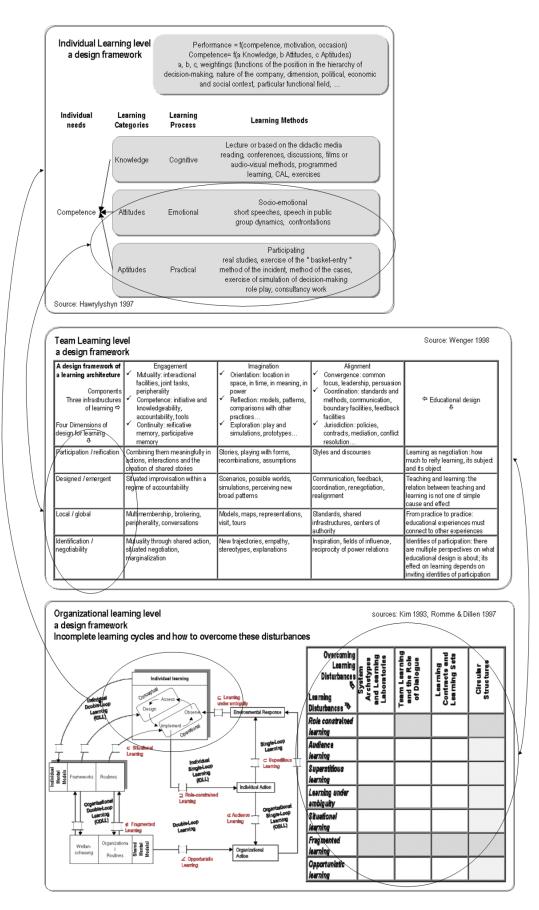


Exhibit 3: Designed framework for learning and acting

Meta-Model

At this stage we have to clarify what kind of model we would like to build. Let us specify the key points.

Gharajedaghi et al.,[29] propose mechanistic and organsmic models to acquire knowledge and understanding of social system operating in complex, ambiguous environments [37]. Thus, a model should have a clear purpose to solve the problem. Every model represents a group of functionally interrelated elements in a system. The usefulness of the model lies in it simplifying an entire system to an understandable level by retaining only essential features pertinent to purpose so that the assumptions can be examined [62].

The type of model: The distinction between optimization and simulation models is particularly important since these types of models are suited for fundamentally different goals:

- Optimization. The output of an optimization model is a statement of the best way to accomplish some goal. They are normative or prescriptive models only telling you what to do in particular situations. Its limitations are linearity, lack of feedback and lack of dynamics.
- 2. Simulation. The purpose of a simulation model is to mimic the real system so that its behaviour can be studied. Simulation models are descriptive. A simulation model clarifies what would happen in a given situation. Every simulation model has two main components. The first includes a representation of the physical world relevant to the problem. The second is the behavioural profile (decision making, responsiveness to situations) of the actors (decision-makers) put into the system using decision-making procedures. The output of the model will be a description of expected decisions. Its limitations lie in quantification of soft variables and choice of model boundary.

The resulting meta-model presented here can be seen as combined model – reflecting the integrative epistemological perspective – with a simulation emphasis and a 'design' purpose according to an 'insight modeller' perspective [33].

In part 3, I describe briefly how the method integrates Governance, which is performance and accountability in decision-making and management, one of the key issues in management education and professional development.

CASE STUDY: CONTEXTUAL AND SITUATIONAL APPORACH FOR PROJECT MANAGEMENT GOVERNANCE IN MANAGEMENT EDUCATION

In project management governance, as projects vary, adapting learning/ decision making systems to situations is crucial [12]. This governance should be based on accountability and performance. Thus, MAP is a governance system providing the initial conditions for accountability and performance through a structure for generating information, knowledge, and understanding, and facilitating transparency, decision-making and management.

MAP Method and Project Management Governance

The MAP Method has the following objectives and characteristics:

• Resolution of the ill-structured problems.

MAP Method comprises an iterative process leading to increasingly precise formulations and allowing the analyses that prepare for the decision, the implementation and the control of the project.

• Common language for a team working on a project.

The MAP Method is conceived for teamwork. Teamwork generates creativity through interaction of people and ideas. Further, dialogue between decision makers and analysts avoids technocracy or subjectivity.

• Overall perception of a project.

The MAP Method leads to visual and synthetic representations of complementary aspects of projects. The analysts and decision makers are engaged in an information environment which contributes to vision and intimate knowledge of project.

• Piloting the process of the management of the project.

The MAP Method aims to make management of the project a process where thought and action interact, not a linear course of a study from the hands of analysts and specialists directly to the decision makers.

• Crossroads of quantitative and psycho-sociological techniques.

MAP integrates quantitative (PERT, Simulation etc.), qualitative, and pycho-sociological approaches (quiet group method, group confrontation, creativity techniques etc).

MAP objectives and characteristics, according to the governance dimension (Performance, Accountability), are presented in Table 5.

Common language for a team working on a
project.
Overall perception of a project.

Inside the black box

MAP method constitutes a set of concepts, methods, tools, and techniques for designing, analysing, and managing complex situations in project context. We consider three main phases: system design, system analysis and system management. Table 6 gives a brief overview of the socio-technical "tool box", and the link with Project Management Governance [13] and Table 7 gives an overview of the project/programme trajectory considered using MAP.

Phase	,		Overview	Main dimension of
				Governance
	u	Stakeholders constellation	Identifying actors involved in the project: producing directly or impacting indirectly	Accountability
	Social system design	Interactions Matrix	Revealing inputs, outputs or variables from stakeholders, able to impact the project positively (opportunity) or negatively (threat)	Performance
lesign	Soci	Check-lists	For each potential impact from a cause, identifying the ambiguities and uncertainties, the group of stakeholders involved, and potential actions to reduce the risk	Performance and accountability
System design	Technical system design	Logical Framework	The logical framework is a set of related concepts that describe in an operational way in matrix form the most important aspects of a project. It provides a way of checking whether the project, and its sub-systems, and	Performance and accountability
		Logical System Tree	their interaction has been well designed. Designing the logical process of the project and identifying the various sub-systems, technical inputs, stakeholders leading to expected performance and success.	Performance
		Technical Risk Assessment	Ranking the level of uncertainty of the socio-technical systems based on external dependency, level of blockage & level of innovation	Performance
	lalysis	Technical Risk Mapping	Representing graphically the level of risk of all the systems and its management	Performance
System Analysis	Scenario "Risk" analysis analysis	Social Risk Assessment	Ranking the level of uncertainty of the stakeholders involved in the project and the 'influence margin' of project team on each stakeholder.	Performance
		Social Risk Mapping	Representing graphically the level of risk of all the stakeholders. Preparing the strategy to manage each stakeholder	Performance
		Stakeholders variables Stakeholders'	Identify the mutually impacting variables from dangerous stakeholders and other stakeholders	Performance and accountability
		Stakeholders' Zones Matrix	Identifying the sub-systems strongly impacted by the various stakeholders zones	Performance
	Scheduling	Chronological System Tree	From the "Logical System Tree", reorganise all the socio-technical sub-systems over time. Revealing critical "ambiguity and uncertainty path in the project trajectory	Performance
t		Strategic Gantt Chart	Assessing the systems duration and the total duration of the project from the social & technical risk analysis	Performance
System Management	Drganising and planning	Linkages Matrix	Analysing the connections between the various stakeholders (and stakeholders zones) and the members of the project team to reveal competencies and project organisation.	Accountability
	Organ	Stakeholders Management Actions	Preparing actions to influence the stakeholders, through the influence of stakeholders' zones	Performance and accountability
	Strategic control	Dynamic System Matrix	Preparing the monitoring of the project. Designing a piloting dashboard of all the sub-systems: intermediate sub-systems of the project and final operational system of the project	Performance and accountability
		Dynamic	Representing graphically all the level of completion and	Performance

Phase	Methods and tools	Overview	Main dimension of Governance
	System	innovation of all the sub-systems of the project.	
	Maturity	Preparing the strategy to control the project over time	
	Mapping		

Table 7: MAP Method Trajectory

Main Phase	Stages	Overview of the techniques
Strategic Choice	Conception	Strategic analysis and recommendation
	Formulation	Scenarios Modelling, Prospective
		analysis, Simulation
		Portfolio Management
Tactical alternatives	Analysis & Evaluation	Technical, Marketing, Organizational,
		Financial & Economical, Impact analysis
		Interaction Analysts / Decision-
		makers: key stage!
	Decision	Real options, Project Financing
Realization	Implementation	Programme / Project Management
	Reports & Feedbacks	Monitoring, Knowledge Management,
		Accountability & Performance
	Transition to operational stage	Organizational design, Learning
	Post-Audit Review	Lessons learned, Knowledge
		Management, Organizational Learning,
		Performance Management

Few examples of use in Education

At ESC Lille, the method is a trans-disciplinary topic, part of various masters' programmes: Project Programme, Portfolio Management, but also International Management, Supply Chain Management, Management accounting etc. MAP method is used as a 'discipline integrator' (see exhibits 4 and 5). This is supported by a project/programme simulation during which teams are unfolding the whole approach. At the end of the simulation each team has to provide two reflective reports addressing use of methods and team work; and how this learning is transferred to their jobs. Practical applications of the MAP method range from development of case studies, scenario analysis, corporate strategy evaluation, and tools for strategic control by the students and faculty.

Exhibit 4 gives an idea of the main theories and concepts part of the approach, giving an overview of the relation between paradigms, theories, and roots of body of knowledge on which tools and method used in MAP are based.

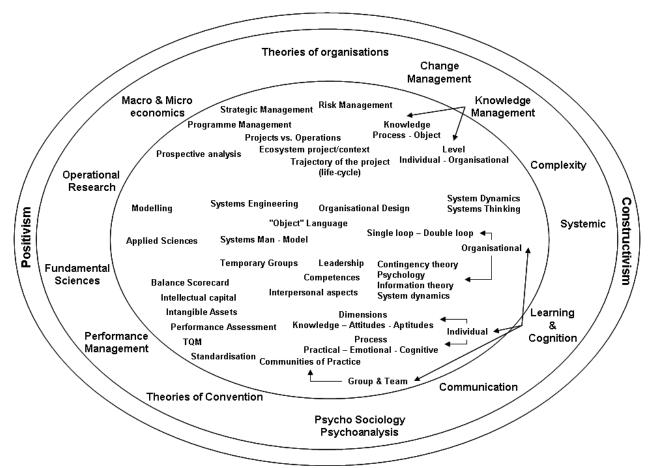


Exhibit 4: Overview of theories and concepts used in MAP Method

FEEDBACK LOOP...

The purpose of this paper was to provide some insights about a meta-method (MAP method) supporting Learning and Acting – Praxis – in project, programme, portfolio situations. A brief case study illustrating the MAP method in action and its application in management education and professional development is shown. The research is based on studies conducted at CIMAP-ESC Lille.

In the first part, I highlighted the role of project management in implementing strategy, especially in complex environments where competence and knowledge development are important for performance and value creation. I then question the appropriateness of current positivist paradigm of project management and call to a change in the epistemological stance towards constructivist paradigm; especially in case of management education.

Then, in a second part, I suggested that acting and learning – praxis – in project (entrepreneurial) situations and contexts involve 'modelling to understand'. This led me to present the underlying theories and concepts supporting MAP method seen as a 'convention generator'.

In the third part, I described briefly how the method integrates and provides a contextual and situational model for project management governance, one of the key issues in management education and professional development. This gave me the opportunity to go inside the MAP method black box and to provide and overview of the 'socio-technical toolbox', techniques, theories, concepts, bodies of knowledge used as part of this method of methods.

As a side effect of this paper, the expected contribution (an immodest task, one might say!), was twofold:

- Through a discussion of epistemological issues, this paper points out the need to define the nature of field and thence the paradigms, theories, methods/tools, and hypotheses.
- To draw the praxeological foundations for the development of 'project wisdom in action', going beyond any fundamentalism, thanks to a process of resolution of opposition where practice and education are intimately and inextricably linked.

In so doing I hope to have contributed, however humbly, to a better perception and understanding of this fascinating field Be-Have! if not bee-hive...[42].

Ordo ab Chaos

REFERENCE LIST

- Ansoff, H.I., Declerck, R.P., & Hayes, R. From Strategic Planning to Strategic Management. New York: John Wiley and Sons, 1976.
- [2]. Argyris, C. & Schön D. Organizational Learning: A Theory of Action Perspective. Reading: Addison-Wesley, 1978.
- [3]. Ashby, R. Requisite Variety and Implications for Control of Complex Systems. Cybernetica, 1958; (1): 83-99.
- [4]. Beinhocker, E. D. Strategy at the edge of chaos. The McKINSEY QUATERLY, 1997; 1.
- [5]. Boisot, M. H. Knowledge Assets: securing competitive advantage in the information economy. New York: Oxford University Press, 1998.
- [6]. Boutinet, JP. Anthropologie du Projet (4th ed.). Paris : PUF, 1996.
- [7]. Boutinet, J-P. Tensions et paradoxes dans le management de projet. Les cahiers de l'actif, 266/267, 1997.
- [8]. Bredillet, C. Essai de définition du champ disciplinaire du management de projet et de sa dynamique d'évolution. Revue Internationale en Gestion et Management de Projets, 1999; 4(2): 6-29.
- [9]. Bredillet, C. Mapping the dynamic of Project Management Field: Project Management in action.Proceedings of PMI 2002 Research Conference, Seattle, 2002a.
- [10]. Bredillet, C. Proposition of a systemic and dynamic model to design life long learning structure: the quest of the missing link between men, team, and organizational learning. In D.P. Slevin, D.L. [11]. Cleland & J. K. Pinto (Eds), The Frontiers of Project Management Research: 2002b, 73-95. Newton Square, PA: Project Management Institute.
- [12]. Bredillet, C. Projects: learning at the edge of organization. In P.W.G. Morris & J. A. Pinto (Eds.), The Resource book on the Management of Projects: 2004a, 1112-1136.Hoboken, NJ: John Wiley & Sons.
- [13]. Bredillet, C. Project Management Governance: a situational approach. Proceedings of EURAM 2004 Conference, St Andrews, 2004b.

- [14]. Bredillet, C. Understanding the very nature of Project Management: a praxeological approach. In
 D.P. Slevin, D.L. Cleland & J. K. Pinto (Eds), Innovations : Project Management Research
 2004c; 3-23. Newton Square, PA: Project Management Institute.
- [15]. Bredillet, C. The Future of Project Management: Mapping the dynamics of Project Management
 [16]. Field in Action. In D. I. Cleland & R. Gareis (Eds.), Global Project Management
 Handbook: Planning, Organizing, and Controlling International Projects (2nd ed.), 2006: 3-1
 3-24. New York, NY: McGraw-Hill, Inc.
- [18]. Brown, J.S. & Duguid, P. Knowledge and Organization: A social-practice perspective. Organization Science, 2001; 12(2): 198-213.
- [19]. Comte, A. Positive Philosophy. London: George Bell & Sons, 1896.
- [20]. Crawford, L. Project Management Competence For Strategy Realisation. Paper presented at the 14th World Congress on Project Management, 1998, Ljubljana, Slovenia.
- [21]. Declerck, R. P., Debourse, JP. & Navarre C. La Méthode de Direction générale : le management stratégique. Paris: Hommes et Techniques, 1983..
- [22]. Declerck, R. P., Debourse, JP. & Declerck, J. C. Le management stratégique: contrôle de l'irréversibilité. Lille: Les éditions ESC Lille, 1997. .
- [23]. Nonaka, I., Toyama, R., & Byosière, P. A Theory of Organizational Knowledge Creation: Understanding the Dynamic Process of Creating Knowledge. In Dierkes, M., Berthoin Antal, A., [25]. Child, J. & Nonaka, I. Handbook of Organizational Learning & Knowledge, 2001; 291-517. New York: Oxford University Press.
- [26]. DMO (Defence Materiel Organisation). Competency Standard for Complex Project Managers.Public Release Version 2.0 September 2006. Commonwealth of Australia (Department of Defence).
- [27]. GAPPS (Global Alliance for Project Performance Standards), 2006. Framework for Performance Based Competency Standards for Global Level 1 and 2 Project Managers. Sydney: GAPPS, 2006.
- [28]. Gareis, R. Management by Projects The Management Strategy of the 'New' project-oriented Company. In R. Gareis (Eds.), Handbook of Management by Projects. Vienna: MANZ, 1990.

- [29]. Gharajedaghi, J., & Ackoff, R. L. Mechanisms, Organisms and Social System. Strategic Management Journal, 1984; (pre-1986) 5(3): 289
- [30]. Giard, V., & Midler, C. Pilotages de Projet et Entreprises : diversités et convergences. Paris: Economica, 1993.
- [31]. Gomez, PY. Qualité et Théorie des Conventions. Paris: Economica, 1994.
- [32]. Gomez, PY., & Jones, B.C. Conventions: an interpretation of deeps structure in organizations.Organization Science, 2000 ; 11(6): 696-708
- [33]. Graham, A.K., & Els, S.A. System Dynamics and Systems Thinking: It Takes All Kinds. Proceedings of the 17th International Conference of the System Dynamics Society, Wellington, New Zealand, 1999.
- [34]. Grundy, T. Strategy implementation and project management. International Journal of Project Management, 1998, 16(1): 43-50.
- [36]. Kurtz, C. F., & Snowden, D. J. The new dynamics of strategy: Sense-making in a complex and complicated world. IBM SYSTEMS JOURNAL, 2003 ; 42 (3)
- [37]. Le Moigne, JL. Le Constructivisme Tome 3 Modéliser pour comprendre. Paris : Ed L'Harmattan, Coll. Ingenium, 2003.
- [39]. Leroy, D. Fondements et impact du Management par Projets. Unpublished doctoral dissertation,IAE de Lille USTL, Lille, 1994.
- [40]. Levi-Strauss, C. Structural Anthropology. New York: HarperCollins, 1974.
- [41]. Lorino, P., & Tarondeau, J.C. De la stratégie aux processus stratégiques. Revue Française de Gestion, 1998 ; 117(Janvier-Février): 5-17.
- [42]. Marx, K. Oeuvres, Economie. Paris: Gallimard NRF, 1965.
- [43]. Morris, P.W.G., & Jamieson, A. Translating Corporate Strategy into Project Strategy: Realizing Corporate Strategy Through Project Management. Newtown Square, PA: Project Management Institute, 2004.
- [44]. NASA One Hundred Rules for NASA Projects Managers. http://www.oliverlehmanntraining.de/free-downloads/Nasa-Hundred-Rules-for-Project-Managers.pdf. Last access: 8 January 2007.

- [45]. Nonaka, I. The knowledge-creating company. Harvard Business Review, 1991; 69(November-December): 96-104.
- [46]. Office of Government Commerce (OGC). Managing Successful Programmes. Norwich: The Stationery Office, 2003.
- [47]. Office of Government Commerce (OGC). Managing Successful Projects with Prince 2. Norwich: The Stationery Office, 2005.
- [48]. Project Management Institute. The Project Manager Competency Development Framework. Newtown Square, PA: Project Management Institute, 2002.
- [49]. Project Management Institute. Organizational Project Management Maturity Model (OPM3®). Newtown Square, PA: Project Management Institute, 2003.
- [50]. Project Management Institute. A Guide to the Project Management Body of Knowledge (PMBOK® Guide) (3rd ed.). Newtown Square, PA: Project Management Institute, 2004.
- [51]. Project Management Institute. The Standard for Program Management. Newtown Square, PA: Project Management Institute, 2006a.
- [52]. Project Management Institute. The Standard for Portfolio Management. Newtown Square, PA: Project Management Institute, 2006b.
- [53]. Richardson, K. A. To be or not to Be? That is (not) the question: Complexity theory and the need for critical thinking. In K. Richardson (Ed.), Managing Organizational Complexity: Philosophy, Theory, and Application: 2005; 21-46. Greenwich: IAP.
- [54]. Polanyi, M. Personal Knowledge. Chicago: University of Chicago Press, 1958.
- [55]. Romme, G. & Dillen, R. Mapping the Landscape of Organizational Learning. European Management Journal, 1997, 15(1): 68-78.
- [56]. Schein, E. Organizational Psychology. Englewood Cliffs, N.J.: Prentice-Hall; 1980.
- [57]. Schön, D. A. Beyond the Stable State. New York: Norton, 1997.
- [58]. Schön, D. A. Educating the Reflective Practitioner. London: Jossey-Bass, 1987.
- [59]. Schumpeter, J. A. Essays on Entrepreneurs, Innovations, Business Cycles, and the Evolution of Capitalism. New Brunswick: Transaction Publishers, 1989.

- [59]. Senge, P. M. The Fifth Discipline, the Art and Practice of the Learning Organization. New York: Doubleday Currency, 1990a.
- [60]. Senge, P. M. The leader's new work: building learning organizations. Sloan Management Review, 1990b, Fall: 7-23.
- [61]. Senge, P. M. Building learning organizations. In B. De Wit & R. Meyer (Eds), Strategy: Process, Content, Context. Minneapolis, MN: West Publishing, 1994.
- [62]. Sterman, J. D. A Skeptic's Guide to Computer Models. In G. O. Barney et al. (Eds.), Boulder, CO: Westview Press, 1991, 209--229
- [63]. Sugden, R. Spontaneous order. Journal of Economic Perspectives, 1989, 3 (Fall): 85-97.
- [64]. Toffler, A.. Power Shift. London: Bantam Press, 1990.
- [65]. Turner, J.R. The Handbook of Project-Based Management. London: McGraw-Hill The Henley Management Series, 1993.
- [66]. Turner, J.R. Projects for shareholder value: the influence of project managers. Proceedings of IRNOP III - "the nature and role of projects in the next 20 years: research issues and problems": 1998, 283-291, Calgary, Alberta.
- [67]. Von Mises, L. 1976. Epistemological Problems of Economics. New York: New York University Press.
- [68]. Von Mises, L. Praxeology. The Freeman: Ideas on Liberty, 1981; 31 (9).
- [69]. Voropajev, V. Change management-A key integrative function of PM in transition economies. International Journal of Project Management, 1998; 16(1): 15-19.
- [70]. Weick, K. E. Sensemaking in organizations. London: SAGE Publications, 1995.
- [71]. Wenger, E. Communities of practice: learning, meaning, and identity. New York, Cambridge University Press, 1998.
- [72]. Wenger, E., McDermott, R.,& Snyder, W. Cultivating communities of practice: a guide to managing knowledge. Boston: Harvard Business School Press, 2002.
- [73]. Wideman, R.M. Defining PM Knowledge as a Basis for Global Communication, Learning, and Professionalism. Proceedings of the 29th Annual Project Management Institute Seminars & Symposium. Long Beach, California, 1998.