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'Kaikaku' Project Management Investigating the Japanese answer to the 90s depression

Abstract

The purpose of this paper is to investigate the Japanese answer to the 90s depression, both as a case study of what framework has been developed to address new business challenges and value creation in complex, ambiguous et uncertain environment; and in order to expose what are, in our view, the underlying theoretical bases supporting this framework. This theoretical approach, and the resulting lessons learned, is assumed to be helpful to transpose the Japanese experience to other analogical contexts and situations.

Keywords: Kaikaku project management, P2M, complexity, ambiguity, uncertainty, positivism, constructivism, epistemology, modelling, praxeology, N vs. S-Leaning, Theory of Convention

***'Kaikaku'* Project Management**

Investigating the Japanese answer to the 90s depression

The purpose of this paper is to investigate the Japanese answer to the 90s depression, both 1) as a case study of what framework has been developed to address new business challenges and value creation in complex, ambiguous et uncertain environment; and 2) in order to expose what are in our view, the underlying theoretical bases supporting this framework. This theoretical approach is assumed to be helpful to transpose the Japanese experience to other analogical contexts and situations.

WHERE CLASSICAL PROJECT MANAGEMENT IS NO LONGER THE ANSWER: ...TOWARDS KAIKAKU PROJECT MANAGEMENT

In the 90s, Japanese companies experienced a deflationary depression called the 'lost ten years.' To survive the depression, they looked for solutions in the '*kaikaku*' (reforms) of business management, organizations and technology while struggling to regain their global competitiveness. We have observed that the companies that utilized the intellectual property of the entire organization were more successful in their reforms than those who focused only on their technological abilities. Specifically, such successful companies made efforts in the planning and execution of strategic businesses that would change the framework of value creation for the next generation. These companies had something in common: they applied a new project management paradigm and related framework. We call it '*Kaikaku Project Management*' (KPM).

Generally, project management has been recognized as a special management technique for engineers who build large, complex technical systems, including man-made creations such as weapons, factories, buildings, and information systems. The main features of this project management paradigm are that it is designed to build 'closed systems' and that the objectives, basic specifications, and injected resources are the 'given conditions'. Thus, closed system serves here as the basic paradigm for thinking. The supporting knowledge framework has been built for the guidelines of project contracts to system suppliers or contractors. The framework is separated from business strategy, in general, and planning by a client. Therefore, the primary role of project manager is limited to the job for engineering and building of the technical system and to hire multiple specialized engineers to integrate different technologies into a single system, while focusing on management by objectives (QCDS: Quality, Cost, Delivery, and Scope).

A study held in 2003 on behalf of Project Management Association Japan provides more insights. 59% of the causes of failures in Project failures (that is not meeting the client expectations) can be found in the Project Definition phase, 32% in the Project Implementation phase and 8% after the Project Delivery. Furthermore the percentage of common understanding (shared view of the project definition, risk, scope and objective) between the clients and suppliers is 49% in IT, and fall to 26% in R&D and consulting, and 25% in Engineering and Construction. In a complex, ambiguous, uncertain environment, and rapid change, suppliers are more likely to reduce the estimate of costs of projects and exaggerate benefits expected. This suggests that: a) Project failures are not necessarily linked to project managers' capabilities; b) Project definition and development are critical factors of success, and should be more clearly specified; c) Project troubles relate to the gap of business practices and perceptions between clients and suppliers.

Meanwhile, the Japanese-style project management introduced the concept of '*kaikaku*' (reform) in early 2001. It is a concept based on comprehensive, strategic 'destruction and creation.' In '*Kaikaku Project Management*' (KPM), the essential power of project management is twofold: 1) the creativity supported by different kinds of knowledge brought together to overcome conservativeness; and 2) the team power across the organization.

Society, government, and companies are looking in the field of project management for systematic human resource development solutions to train people to become '*kaikaku*' leaders. To compile a body of knowledge that satisfies such needs, we need to make a paradigm shift from the 'closed technical system' to an 'open value system.' Let us look at an example. Behind a plan to build a factory or an information system, there are strategic intention and strong determination to create new businesses or products and achieve organizational growth while being aware of external changes in the ecosystem, market, clientele, and competition, etc.

The traditional role of project management has focused only on the technical aspect, that is, 'how we should build' a factory or information system. However, this perspective is only a part of the whole picture. In KPM, we need to consider the overall goal for strategic businesses from a top executive's viewpoint, asking ourselves questions such as, 'Why are we building it?' or 'When should we recoup the investment?' KPM offers a body of knowledge based on the following concept: taking account of the life cycle of a project from investment to its recuperation (i.e. planning, systemization, and management of the project), the project organization injects the intellectual resources accumulated in the organization into the project to create value for the future.

Features of KPM

Some point out that the ideal leaders that KPM is seeking are top executives. Global competition has reduced the life cycle of a given organization to 5-10 years. This makes it difficult for companies to survive without '*kaikaku*' projects. The question is: can top executives really curtail many reform efforts according to their life cycles? We have observed that many reform projects have 'run out of gases' or 'disappeared' in major companies. Accordingly, among rapidly growing companies, there are quite a few bankruptcies because of shortage of reform leaders. Meanwhile, KPM aims at training next-generation leaders who can link company-wide reforms to numerous projects, include such projects in business scenarios, and carry them out.

The following are KPM concept main features.

- KPM is a project management practice which utilizes the natural perceptive ability of human beings. What is the starting point of a reform project? It is the strong desire to become better in the future. We humans are born with the perceptive ability that helps us draw a picture of the future from a comprehensive viewpoint and with a broad perspective. This is an ability that helps us create missions so that we can solve problems as a whole. Creative imagination and wisdom based on experience are integrated into this quality of creating missions, which serves as the key element of the project's success.

- KPM promotes the creation of future value by utilizing a number of reform projects linked to strategy. Missions for a company's reform can be created not only by the top executives but also by the entire organization. However, missions tend to be buried within the organization. KPM is designed to create a corporate culture that respects missions, discover outstanding visions for reform from the entire organization, link such outstanding visions to the company-wide strategy, and use them in the creation of future value that promotes reform projects using project management.

- KPM provides a body of knowledge to the training of core leaders whose responsibility is to recoup the investment. Core leaders' goal is to achieve the missions. They are also responsible for the management of the entire life cycle (development, planning, and result) of each mission that they are assigned by its creator or owner. The core leaders have the key responsibility for the reform. They play a role in promoting the reform by making the best use of 'intellectual resources' that have been accumulated in the organization for the next generation. KPM promotes human resource development by providing a body of knowledge and methodology.

- KPM proposes a methodology for avoiding risks of failure and resistance in the organization. A reform project tends to generate internal resistance because of conflict of interest, uncertainty, or a result of employee learning, etc, having the risk of failure. This can be solved in two different ways. The first is to introduce a Human Resource system tailored to the project that is designed to reflect the employees' reform proposals and efforts in their performance reviews. The second is to introduce company-wide human resource development. It is essential to train next-generation core leaders by providing our employees not only with usual organizational experience but also with multiple career paths that allow us to reassign the employees based on their project experiences.

- KPM provides a methodology for undertaking the solution of complex, ambiguous, uncertain issues. In order to solve company-wide issues, it is essential to take an epistemological approach and promote the knowledge of project management. Thus simulation, grounded on interdisciplinary approaches, theories based on complex system science, and case studies, is useful in explaining the structure, function, and behaviour of complex, ambiguous, uncertain phenomena in project modelling based on hypothesizing and testing practices.

**MISSION DRIVEN APPROACH FOR MANAGING PROJECTS IN COMPLEX,
AMBIGUOUS, UNCERTAIN ENVIRONMENT AND SITUATIONS:
DEMYSTIFYING THE NEW FRAMEWORK**

Based on the previous observations, findings and KPM paradigm, a Japanese new framework for Project & Programme Management – called P2M: Project & Programme Management for Enterprise Innovation – was developed in 2000-2001, which has been a standard guide for education and certification since its development (Ohara, 2005). Moving beyond the classical project management approach centred on analytic and positivist thinking paradigm and not suitable as such for the new challenges, P2M proposes a framework based on a Mission Driven Approach and insightful thinking – based on a constructivist perspective enabling to address complex, ambiguous and uncertain situations – in order to translate the strategic intent or idea, and resulting Mission into value creation operations and capital recovery. This through a life cycle integrating three models: scheme, system and services models. In P2M context, modelling is a generic approach that integrates multi/interdisciplinary knowledge and methodologies.

In a context where:

- Classical project management validity is limited to well structured socio-technical systems and when mission is explicit;
- Complex, ambiguous, uncertain environment involve a new approach, being able to address implicit mission;
- Project definition and the related perception gap between clients and suppliers has to be addressed.

P2M key characteristics can be summarized as follows:

Characteristic 1 Mission is shared in ambiguity (adaptive and implicit) rather than with clear definition (explicit) if innovative view is desired;

Characteristic 2 P2M framework addresses implicit mission type and explicit mission type as well;

Characteristic 3 Mission is a creative output from human insight capability combining rationality and intuition, explicit and implicit, linear and non linear approaches, divergent and convergent thinking;

Characteristic 4 Mission is a 'meta-model representation' of the future ideality in a complex, ambiguous, uncertain world;

Characteristic 5 P2M focuses on a 'Mission Driven Approach' project management, which explores and includes value creation activity underpinned by Mission in complex, ambiguous and uncertain environment;

Characteristic 6 Modelling is part of P2M. A programme reference model combining three models (scheme, system and service) represents a generic lifecycle from Mission to capital recovery through value creation;

Characteristic 7 Profiling and modelling are core methodologies powered by a combination of human insightful capability and scientific analysis;

Characteristic 8 Modelling is a generic approach which integrates interdisciplinary knowledge, methodologies and approaches.

The context and the characteristics aforementioned are related to theoretical insights in the next part of the paper.

SOME THEORETICAL INSIGHTS ABOUT P2M AND PROJECT MANAGEMENT

The case of the P2M framework is quite unique in a way it moves beyond the classical “process” and “competence” bodies of knowledge (BoKs) and standards proposed by the well established professional bodies.

The big idea (rationale...), for many Industries and Professional Bodies, is to have an integrated framework for the translation of the strategic aims of an organization into operational processes to improve performance and generate superior and sustained value creation. And the supporting professional development and certification processes. But these BoKs and standards are still mostly based on a positivist paradigm – even when they claim to address ‘complex project management’ – exemplified by linear process views, classical operational research set of tools and techniques, or list of competence coming from classical management perspective.

It is easy to connect these remarks with the current development of research and standards addressing the link strategy, portfolio, programme and project management. Exemplifying this trend are:

- PMI: 2004 research project Translating Corporate Strategy into Project Strategy: Realizing Corporate Strategy Through Project Management, by Morris and Jamieson (2004), A Guide to the Project Management Body of Knowledge (PMBOK® Guide)—Third Edition (PMI, 2004), Organizational Project Management Maturity Model (OPM3) and Standards for Program (PMI, 2006) and Portfolio Management (PMI, 2006);
- From the U.K. APMG on behalf of the Office of Government Commerce (OGC): PRINCE2™ (OGC, 2005), Managing Successful Programmes (OGC, 2003);
- The ongoing development of a new AACEI integrated standard and certification scheme dealing with Portfolio, Programme and Project levels (C3PM);

- The launch of the College of Complex Project Managers in November 2006 (the Australia DMO, the UK MoD, the US DAU) and related guide (DMO, 2006);
- The official launch of the Global Alliance for Project Performance Standards (GAPPS) in November 2006 (GAPPS, 2006).

Our purpose is now to provide some theoretical insights about P2M, and more specifically, to develop some thoughts about how Project Management is understood here as special type of ‘entrepreneurial’ activity (vs. ‘operational’ activity) and seen as a Mirror (Bredillet, 2004), a place for action and reflection, between the Mission of organisation and its actual creation of Values (with s: a source of value for people, organisations and society). This place is the realm of complexity (Richardson, 2005), ambiguity and uncertainty, of interactions between multiple variables, each of them having a specific time horizon and occupying a specific place, playing a specific role. This theoretical approach is assumed to be helpful to transpose the Japanese experience to other analogical contexts and situations.

Project Management as a Complex Integrative Field

The following discussion is mainly related to contextual issues and P2M characteristics 1 and 2.

We are constantly surprised by the way the world, i.e. organisations, universities, and professional bodies, sees project management: as a set of methods, techniques, tools, interacting with others fields – general management, engineering, construction, information systems, etc. – bringing some effective (?) ways of dealing with various sets of problems – from launching a new satellite to product development through to organisational change. The problem being that most of the tools, techniques, and methods involve a conceptual approach based on a specific paradigm, which is mostly, in project management, a positivist one.

We need to question whether this is the appropriate paradigm for the kind of project management, which claims to be able to deal with complex problems that do not have clear or straightforward solutions. The apparent lack of a theoretical foundation, the lack of a clear epistemological position in most of the research to date and the lack of a clear paradigm in most of the literature, seem, from our perspective, to be a real barrier to effective understanding and communication of the true nature of project management. This leads to nonsense, to a dynamic, a fad, where hype, advocacy of one's own practice is the rule, reinforced by a lack of critical thinking by the practitioners, who complacently accept seemingly reasonable answers, even if they lead to major failures. Positivism has led in some cases to over-simplification – one problem equals one solution – and in many cases has obviated against recognition of the complexity and of the relativity of the world. The place of project management within most universities and as a research field shows that it is not yet considered as a discrete discipline. In most universities it is treated as a sub-discipline of construction, engineering, IT or business faculties. At the same time it is claimed to be a trans-functional discipline. This situation itself contributes to a reinforcement of the positivist paradigm that pervades teaching, research, and practice of the discipline.

A need for complexity. Kurtz and Snowden (2003) question the three basic assumptions that pervade the practice and the theory of decision-making and thus the translation of the organisations mission into practice: assumptions of order, assumption of rational choice and assumption of intentional capability:

- "The assumption of order: that there are underlying relationships between cause and effect in human interactions and markets, which are capable of discovery and empirical verification. In consequence, it is possible to produce prescriptive and predictive models and design interventions that allow us to achieve goals. This implies that an

understanding of the causal links in past behaviour allows us to define “best practice” for future behaviour. It also implies that there must be a right or ideal way of doing things.

- The assumption of rational choice: that faced with a choice between one or more alternatives, human actors will make a “rational” decision based only on minimizing pain or maximizing pleasure; and, in consequence, their individual and collective behaviour can be managed by manipulation of pain or pleasure outcomes and through education to make those consequences evident.

- The assumption of intentional capability: that the acquisition of capability indicates an intention to use that capability, and that actions from competitors, populations, nation states, communities, or whatever collective identity is under consideration are the result of intentional behaviour. In effect, we assume that every “blink” we see is a “wink,” and act accordingly. We accept that we do things by accident, but assume that others do things deliberately.”

We concur with them and would argue that project management needs to be understood as a complex discipline because it aims to deal with complex reality. In mathematics, since Ashby (1958) and the law of requisite variety, it is well known that to control a complex system with n dimensions, you need an $n+1$ dimensional system. The available control variety must be equal to or greater than the disturbance variety for control to be possible. A number of conclusions can be derived from information theory, or from games theory; in a communications system, to transmit a message and receive it successfully, the coding/decoding variety must exceed the interference variety. In a game the variety of moves you have available must be greater than the variety of moves available to your opponent if you are to be able to win. This implies that it is important to plan for many states (= situations) and many misunderstandings. As part of the key resulting concepts and principles,

the following can be mentioned as very pertinent to the management of complex situations (programs & projects) topic:

- 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.

Project management also needs to be simple, as far as its principles are concerned: like white light is transformed into multiple colours through a prism, project management applications may be seen as coming from some general principles. Project management needs to integrate both quality ('Be') and quantity ('Have'). Project management is a process of naming, of revelation, of creation. Thus, our 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.

Project: a polysemic concept. From one perspective (Leroy, 1994), the concept of project is generally approached by listing its intrinsic characteristics. We have selected three definitions, chosen to demonstrate the range of different perspectives in the approaching of the project concept:

- *"a project is a temporary endeavour undertaken to create a unique product or service"* (PMI, PMBOK® Guide, 2004), pointing out an instrumental perspective;

- *“an endeavour in which human, material and financial resources are organised in a novel way, to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives.”* (Turner, 1993), putting forward a cognitive perspective;

- *“a project is a whole of actions limited in time and space, inserted in, and in interaction with a politico-socio-economic environment, aimed at and tended towards a goal progressively redefined by the dialectic between the thought (the project plan) and the reality”* (Declerck et al, 1983, 1997), illustrating a political perspective.

These different perspectives illustrate the polysemic nature of the concept of project (Boutinet, 1996). This polysemic nature is at the source of two underlying visions which have evolved with the development of project management.

On the one hand, it is interesting to note that the development of project management was accompanied by the constitution of codes of practice and this according to two plans:

1. First, in the plan of the people, from the builders of cathedrals to the National Aeronautics and Space Administration (NASA) 100 rules of “the good” project manager, while passing by the processes of certification of the people, this being connected in the majority of the cases to an "initiation rite" (and rite comes from the Sanskrit rita = order), where theoretical knowledge is not enough, even if essential, but must be accompanied by recognition of the peers and of the practice;

2. Then, in the plan of the processes of management of the trajectory of the projects by the organisations, with the appearance of the standards, either with descriptive or prescriptive feature. The underlying vision is, here, a positivist one: experiences and practices lead to standard and rules, standard and rules lead to theories, which lead to paradigms, and all these, according to certain assumptions, are used as a basis of code of practices, bodies of knowledge.

On the other hand, through projects, man builds reality and as highlighted by authors like Declerck et al (1997), the management of projects by its mode of deployment within the ecosystem project/firm/context implies a systemic vision, “*an ‘intelligent’ action, ‘ingenium’, this mental faculty which makes possible to connect in a fast, suitable and happy way the separate things*” as stated by Le Moigne (1995), quoting Giambattista Vico (1708). Thus, the evolution noted in the use of project management and/or management by projects (Giard & Midler, 1993) 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 appear to be consubstantial with the concept of management of projects underlining the “*tensions and paradoxes in project management*”. Boutinet (1997) shows that the project model can constitute a suitable reference for the management of organisations, s, through, them it is possible to create and to innovate by using several parameters, which they organise in a paradoxical way. Not being conscious of this often involves us toward a drift of totalitarian or technicist project or toward simplification, the vulgarizing of projects brought back to our daily life. Current organisations in the mobility of our post-industrial culture resort readily to the figure of the project as a model of management: industrial companies, social or educational establishments, services, etc. This recourse seems suitable insofar as we move in complex and fluctuating environments which confront us to create and innovate, while always resorting to a plurality of parameters; to reason in terms of objectives is to be located from the unidimensional point of view, that which we knew; to reason in terms of projects, it is precisely to take into account this multidimensional thought made of a plurality of components take into account; however those by the force of the things often maintain between them the paradoxical relations. Indeed to speak about paradox is deliberately to fit in

a way of thinking uncommon, founded on a non-traditional logic, that of unexpected, 'fuzzy' and uncertainty in particular.

This way of thinking is completely congruent with our time of post-modernity marked by the advent of the post-industrial culture; we have now left the universe of the certainty, the constants, the determinisms and the laws to enter that of fluidities and paradoxes. Doesn't the currently dominant reign of the communication networks represent an emergence, impossible to circumvent, of the plural oppositions which make us initially have a presentiment of an environment conditioned by the mode of its diversities and its contrasts? The project embodies completely this paradoxical reality since it exists only to disappear as soon as it is carried out! To speak about the non-traditional paradox of logic is to take a stand in opposition to traditional formal logic which has dominated until the end of the industrial age. This traditional logic was concerned with coherence and haunted by the principle of non-contradiction; discipline of the mind and controlled sets of steps. This logic 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.

These considerations on the different perspectives embodied in the concept of projects, on the polysemic nature of the concept, and consequentially on the underlying positivist and constructivist visions consubstantial to the concept of management of projects and its paradoxical and non-traditional logic, lead me to present an epistemological position on project management.

An epistemological perspective for project management

We are mostly addressing here characteristic 3 and some aspects of characteristics 5 and 8.

After Polanyi (1958), we propose an alternative epistemological perspective both to positivism and constructivism. We have no intention to separate personal judgment from scientific method. We argue that, especially in project management, knowledge creation and production has to integrate both classical scientific aspects and ‘fuzzy’ or symbolic aspects. A ‘reality’ can be explained according to a specific point of view and also can be considered as the symbol of higher order (Guénon, 1986) and a more general reality (example, a two-dimensional form can be seen as the projection on a plan of a n-dimensional figure). We 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. It could be considered to be a fundamental explanation of the pre-paradigmatic nature of this field (Kuhn, 1970): the dominant paradigm, source of well established theory(ies) is NOT to find, the deep nature of project management implies this paradox of being built on moving paradigms reflecting the diversity of the creation process by itself.

This field is thus composed of both quantitative aspects (Have), dependent upon the positivist paradigm, where people have few degrees of freedom (operational research in network optimization, cost engineering, statistical methods, bodies of knowledge, application of standards, best practices, code of ethics ... all these are seen as the truth), and qualitative aspects (Be), dependent upon the constructivist paradigm where people have many degrees of freedom (organisational design, learning, knowledge management, change management, systemic approaches, contextualisation of the life-cycle, meta-rules, etc.), some of these aspects being linked together: for example the creation and evolution of standards seen from the Theory of Convention (social construct) and their application (positivism) (Bredillet,

2002). The problem is that, most of the time, people are using methods and tools without any idea of the validity of the underlying assumptions.

Thus, our vision for project management would be one of an integral function: the knowledge field is made up of differential elements; each of them able to be defined, for example cost control, scheduling, communication, quality, information system, temporary group, etc. Seen as a whole, it is a transition to the limit, and in mathematics the result of an integral is both quantitatively and qualitatively more than the sum of the parts. In other words, it can be called a system effect: parts A, B and C forming a system S, keeping some of their properties and potential performances, losing some others, but gaining some entirely new performances.

From this point of view of the conceptual field of management of projects, like Le Moigne (1995) we could argue that there is *“inseparability of the knowledge and its representation understood in their distinctable activity, the intentional experience of the knowing subject and the groping construction of the subject representing knowledge, this undoubtedly constituting the strong assumption on which are defined teachable knowledge today, both scientific and ordinary”* (See below the role of symbols in Theory of Convention).

So for us, project management as a knowledge field is both an art and a science, in their 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, Positive Philosophy, Chapter II, p 43. 1896)
- The constructivist epistemology (immaterialist – qualitative – Be), with two hypotheses of reference as underlined by Le Moigne (1995):

1- 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 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.

2- 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 of the works on organisational learning, learning organisations, knowledge management, knowledge-creating organisations, etc., are based on a traditional understanding of the nature of knowledge. We could name this understanding the ‘positivist epistemology’ perspective since it treats knowledge as something people, teams, and organisations have. But, this perspective does not reflect the knowing found in individual and team practice, knowing (understanding) as an ‘intelligent’ action, ‘ingenium’, as stated by Le Moigne (1995), in calling for a ‘constructivist epistemology’ perspective. 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 suggests that organisations will be better understood if explicit, tacit, individual and team/organisational information /knowledge /understanding are treated as four distinct forms (each doing work the others cannot), and if information, knowledge and understanding are seen as inseparable and mutually enabling. Thus, “*Information is descriptive; it is contained in answers to questions*

that begin with such words as what, which, who, how many, when and where. Knowledge is instructive; it is conveyed by answers to how-to questions. Understanding is explanatory; it is transmitted by answers to why questions. To understand a system is to be able to explain its properties and behaviour and to reveal why it is what it is and why it behaves the way it does” (Gharajedaghi & Ackoff, 1984).

‘Modelling to understand’ that is to do ingeniously!

(See above notion of ‘Ingenium’)

In this part the discussion is mainly related to characteristics 4, 5, 6, 7 and 8.

How to cope with these various complex, ambiguous, uncertain management situations?

Acting in complex situations involves “Modelling to understand” that is to do ingeniously (Le Moigne, 2003). We are introducing the theoretical roots of the design of a meta-model.

According to a complexity and systemic perspective acting and learning are inseparable. This involves having information, tacit, implicit or explicit knowledge, as well as understanding of the context, the different parameters and variables, their interaction and conditions of change. Thus, we can consider that there is a systemic and dynamic link between mission, management of program & project, information, knowledge, learning and understanding in a given context and under given conditions.

This meta-modelling approach is well grounded in sound theoretical organisational frameworks. With a project management perspective, we can say the meta-method is about designing a contextual structure that:

- Provides a privileged place for individuals, project managers and stakeholders to act and learn and such learning in project environment needs to integrate the two perspectives, as there is a need for a blend of creative or exploratory learning and application or exploitative learning (Boisot, 1998, p. 116). Having in mind the need for efficiency and

effectiveness, a project team acts as a temporary dissipative structure (Declerck, R., Debourse, & Declerck, J., 1997, p. 207), generating first entropy (that is knowledge) creating knowledge with many degrees of freedom, then applying it (entropy reduction by reduction of complexity, Boisot, 1998, p. 67-68) in the former stage of a project.

- 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 – pragmatological subjectivity), and an effect chain (action fulfilled feasible or unfeasible – praxeological subjectivity). This epistemo-praxiologic cognition involves both partial subjectivity AND partial objectivity, congruent with our previous alternative epistemological position.

- 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 rational voids.

It is worthwhile to write few words about the underlying theories in which is rooted any metal modelling approach. Two main theoretical areas, aligned with our 'balanced' epistemological position exposed earlier in this paper are considered here. This meta-modelling approach is grounded on 'N-Learning' vs. 'S-Learning' dialectic, a praxeological approach.

N vs. S-Learning. We are borrowing from Boisot (1998) a model grounded on an information perspective and Complexity science, a set of theories describing how complex adaptive systems work. For him (p. 34), knowledge assets emerge as a result of a two-step process, constituting the two distinct phases of the evolutionary production function: creating knowledge ('process of extracting information from data') and applying knowledge ('testing the insights created in a variety of situations that allow for the gradual accumulation of experiential data'). He defines an Information space (I-Space) according to three dimensions: codification (information codified/uncodified), abstraction (abstract/concrete), and diffusion (diffused/undiffused). The creation and diffusion of new knowledge occurs in a particular sequence (Social Learning Cycle – SLC, p. 59): scanning, problem-solving, abstraction, diffusion, absorption, impacting. Two distinct theories of learning, although not mutually exclusive, are introduced as part of identification of two distinct strategic orientations for dealing with the paradox of value (i.e. "*maximising the utility of knowledge assets compromises their scarcity, and maximising their scarcity make it difficult to develop and exploit their utility*", p. 90). In neoclassical learning (N-Learning) knowledge is considered cumulative. Learning becomes a stabilizing process. This approach may lead to excessive inertia and fossilization of the knowledge assets. In Schumpeterian learning (S-Learning), change is the natural order of things. Abstraction and codification are incomplete. "*Knowledge may be progressive in the sense that successive approximation may give a better grasp of the underlying structures of reality, but it is not necessarily cumulative*" (p. 99). S-Learning is more complex than N-Learning integrating both certainties and uncertainties, and requires an 'edge of chaos' culture (p. 116).

Praxeology. One of the key understandings in project management is that learning and practice are integrated into praxis – praxeological approach (see above the notion of 'ingenium'). 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, 1976, Chapter 1 §6). Praxeology (early alteration of praxiology) is the study of human action and conduct. The name praxeology takes its root in praxis, Medieval Latin, from Greek, doing, action, from *prassein* to do, practice (Merriam-Webster Dictionary). The term *praxeology* was first used in 1890 by Espinas in 'Les Origines de la technologie', *Revue Philosophique*, XVth year, XXX, p. 114-15. Praxeology is the study of those aspects of human action that can be grasped a priori; in other words, it is concerned with the conceptual analysis and logical implications of preference, choice, means-end schemes, and so forth. The basic principles of praxeology were first discovered by the Greek philosophers, who used them as a foundation for a eudaemonistic ethics. This approach was further developed by the Scholastics, who extended praxeological analysis to the foundations of economics and social science as well. In the late nineteenth century, the praxeological approach to economics and social science was rediscovered by Carl Menger (1985), founder of the Austrian School. The term praxeology was first applied to this approach by the later Austrian economist Ludwig von Mises.

Along with his students (including Friedrich Hayek and Murray Rothbard), Mises employed praxeological principles to show that much existing economic and social theory was conceptually incoherent:

"It is no longer possible to define neatly the boundaries between the kind of action which is the proper field of economic science in the narrower sense, and other action. Acting man is always concerned with both 'material' and 'ideal' things. He chooses between alternatives. ... Choosing determines all human decisions. ... Out of the political economy of the classical school emerges the general theory of human action, praxeology. ... No treatment of economic problems proper can avoid starting from acts of choice; economics

becomes a part, although the hitherto best elaborated part, of a more universal science, praxeology. Praxeology—and consequently economics too—is a deductive system. It draws its strength from the starting point of its deductions, from the category of action. Praxeology is a theoretical and systematic, not a historical, science. Its statements and propositions are not derived from experience. They are, like those of logic and mathematics, a priori. They are not subject to verification or falsification on the ground of experience and facts.” (Von Mises, 1981)

Acting, knowing and learning within projects and programmes

The following developments are principally related to characteristic 5.

"Projects, as strategic processes, modify the conditions of the firm in its environment. Through them, resources and competencies are mobilized to create competitive advantage and other sources of value." (Bredillet, 2005). As resources are easily shared by many organizations, the organization's competencies are the most important relevant driver. Thus, through the organization's processes or projects, past action is actualized as experience; present action reveals and proves competencies; future action generates and tries out new competencies (Lorino and Tarondeau, 1998). Competencies (both individual, team and organizational) are at the source of competitive advantage and the creation of value.

We would like first to compare some characteristics of groups and teams. Wenger, McDermott and Snyder (2002, p. 142) draw a comparison between several forms of team organizations: community of practice, formal work group, informal network, and project team. There are some fundamental differences between project team, community of practice, and Ba, platform for the knowledge creation process (Nonaka, Toyama, and Byosiere in Dierkes, Berhoin Antal, Child, and Nonaka, 2001, pp. 491-517). They are summarized in Table 1.

Insert Table 1 about here

To understand the specificity created by the project environment and project team as far as learning is concerned, let us synthesize some of the key perspectives in Table 2

Insert Table 2 about here

From this table, it is clear that projects as such are learning organizations or learning places. Projects, through the way the project team acts (praxis), are a privileged place for learning: such project-based learning needs to integrate the two perspectives ('Have' and 'Be'), as there is a need for a blend of creative or exploratory learning and application or exploitative learning (Boisot, 1998, p. 116). Having in mind the need for efficiency and effectiveness, a project team acts as a temporary structure, generating first information and creating knowledge (adding complexity) with many degrees of freedom, and then applying it (reduction of complexity) in the former stage of a project. Of course, the level of knowledge being created will depend of the nature of system project/organization/environment. Some construction projects require a little amount of creativity, while others, in a different context, will require a lot.

On a larger issue, this praxis is so fascinating within projects precisely because all new project teams must solve a unique conundrum: to what degree is the information/knowledge available to complete the project based on past experience, replicable historical processes, etc., and to what degree must all knowledge and learning be acquired or "emergent" as a result of the unique nature of the project tasks.

The consequence at the praxis level is twofold. On the one hand, focusing on the 'Have' side, there is a need of for some form of knowledge – guidance, best practice, standards, etc. –

at the individual, team, and organizational level. The developments of professional certification programs, as well as maturity models, are important in this. It is important to recognize that such standards have to be seen as largely social constructs, developed facilitate communication and trust among those who are adopting them, but their evolution is in line with the experiences gained by the users, or because of new developments or practices is vital to avoid any fossilization. On the other hand, on the 'Be' side, the need of more creative competence (e.g., some professional certifications are incorporating personal characteristics), flexible frameworks (e.g., use of meta-rules), and organizational structure to enable the sharing of experience is fundamental.

Consider now the organization of learning and the necessary supporting structures. Each organization running projects and programmes has its own characteristics. Each has to build its own learning organization system. Being conscious of the specificity of projects, and being clear on the underlying assumptions of the concepts, methods, tools and techniques available, should however certainly help in the design of an appropriate system for project and programme management governance and efficient and effective strategy implementation.

Modelling as 'Convention' generator

In P2M modelling is a central characteristic. Mission is considered as a meaningful 'meta-model representation' (characteristic 4), and Modelling is part of P2M programme reference model combining three models (scheme, system and service) and represents a generic lifecycle from Mission to capital recovery through value creation (characteristic 6). Characteristics 7 and 8 are addressed as well. In the meantime P2M development as such can be seen as a modelling activity. Thus the previous theoretical and following developments can apply to both P2M framework development AND to modelling as part of P2M. We are focusing here in the later aspect.

It is thus important to understand that modelling enables to generate specific 'conventions'. These conventions are more than organizational or Professional Bodies' standards.

Bredillet (2002) has introduced an alternative view of standardisation, mentioning the difficulties classical micro-economics poses in establishing a theory of standardisation that is compatible with its fundamental axiomatic are underscored. He has proposed to reconsider the problem by from the opposite perspective by questioning the theoretical base and by reformulating assumptions on the autonomy of the choice of the actors. The theory of Convention offers both a theoretical framework and tools, enabling to understand the systemic dimension and dynamic structure of standards seen as a special case of conventions.

Gomez and Jones (2000) outline the main characteristics of the Theory of Convention: starting with the notions such as 'deep structure' (Giddens, 1986; Gersick, 1991, Schein, 1980) and 'system structure' (Crozier & Friedberg, 1980, Senge, 1990, 1994), they adopt *"this viewpoint that a state of 'un-enlightenment' represents neither a failure nor a consequence of cognitive limitations, but rather that it has a social function, and that it exists because it is essential for the smooth running of relationships in society"* (Gomez & Jones, 2000, p. 697). They argue that it could, indeed, constitute a referential notion, making compatible individual calculations and social context, and allowing for their co-construction and co-evolution (Schumpeter, 1989).

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 & Jones, 2000, p. 700). These signals are said to operate also as symbols.

So, what is a convention? A convention is a social mechanism that associates a rational void, i.e., a set of non justified norms, with a screen of symbols, i.e., an interrelation between objects, discourses, and behaviours. People acting according to a given convention refer to the same non justified criteria and take for granted the symbolic meaning of signals they receive. Convention is an archetype or 'structure' in Levi-Strauss' definition, that is to say, "*a set of formal relationships among the elements in a symbolic system which can be modelled*" (Levi-Strauss, 1971, 1974).

More formally, the concept of convention can be described as follows (Gomez, 1994, p. 95).

- A convention eliminates a situation of uncertainty where the result of a decision or an action for an agent would be indeterminate by individual calculation alone.

- A convention is an evolutionarily stable (Sugden, 1989) element of regularity. It provides a justifying set of norms (the rational void), which makes justification of some choices dispensable, but which gives them sense in the context of a screen of symbols, which relate objects, discourse, and behaviours to the same rational void.

- A convention is based on a shared belief. Five criteria, known as Lewis' conditions (Orlean, 1989; see also Lewis, 1969, p.42) are used to verify this: (1) There is general compliance with the convention. Those who comply are known as adopters. (2) All adopters anticipate that others will also comply (adopt). (3) Everyone prefers compliance with the convention to be general rather than less than general. (4) There could be at least one other alternative regular solution for the problem the convention exists to solve. (5) These first four conditions are common knowledge.

From this several important consequences can be drawn and discussed (Gomez & Jones, 2000). Among the most important on which is based (meta-) modelling seen as a 'convention generator':

- An individual always finds himself or herself within a conventional system of rationalization. An observed behaviour is not always in relation to all symbols. It is situated in the screen of symbols, which means that it is 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 more numerous the symbolic signals received by an individual, the higher the probability of finding dissonant signals, and thus to be 'attracted' by another convention. Learning plays an ambiguous role in this matter as even the organisational learning process (Argyris & Schön, 1978) can itself be either a new source of conformity and conservatism, when it leads to the recognition of only coherent symbolic signals, or a source of nonconformist behaviour when it allows an increase in the number of signals that the individual perceives and the probability of encountering dissonance.

- No one individual can change a whole convention, but that everyone, by acting on it and within it locally, contributes to its evolution. This gives precision to the role and the limit of managerial action in organisations. Managers are not planners and decision

makers applying a supposedly pure rationality, as they are always included in a social environment which gives both sense and limits to their rationality. They 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. Management has the subtle task of creating the conditions for routinization and, eventually, deroutinization. In practice, the use of a conventionalist framework leads us to understand organisational situations rather than organisations as an abstract and static whole.

CONCLUDING REMARKS

Based on the investigation of the Japanese answer to the 90s depression, we illustrated that classical project management was no longer (but was it ever?) sufficient to face the challenge of value creation in complex, ambiguous and uncertain situations. Then, we introduced the new Japanese framework (P2M) based on Mission Driven Approach project management, and its main characteristics. From this we proposed a theoretical debate and suggested some possible relations between P2M main characteristics and general theories. Table 3 is summarizing the links between them.

Insert Table 3 about here

In order to tentatively generalize these findings, we suggest that recognition of ‘complexity, ambiguity and uncertainty’, ‘integrative epistemological approach’, modelling and its underlying bases (N. vs. S-Learning, Praxeology), ‘Acting, Knowing and Learning’, and Theory of Convention seem to form a robust theoretical background to the development and content of any framework aiming at addressing the challenge of value creation in complex, ambiguous and uncertain environments and situations.

Beyond P2M specificity – rooted in the Japanese culture – these theoretical bases may be seen as useful in supporting project (programme, portfolio) management frameworks contents, and in their contextual application. Finally, we suggest that organisations and Professional Bodies would get some benefits being more conscious of these theoretical roots and of the dynamic at stake in such framework development and design.

Further research is currently undertaken, based of these developments and specially we are investigating what Theory of Convention – and thus coordination through the relationship between effort convention (focusing on the organisation) and qualification convention (focusing on the relationships between the organisation and the ‘market’) – could bring and how it could be applied to the analysis and improvement of organizations maturity, another misunderstood topic.

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TABLE 1: Putting in perspective project team, community of practice, and *Ba*.

Project Team	Community of Practice	<i>Ba</i>
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 2: Synthesis of two perspectives ('Have' & 'Be') regarding Knowledge Management, Organizational Learning and Learning Organizations

Epistemology	Positivist – 'Have'	Constructivist – 'Be'
Knowledge Management	Western approach. Codification. Explicit knowledge. Linear thinking. Knowledge market.	'Japanese' approach (KPM) 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, 1990, Kim, 1993)
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) Schumpeterian learning (S-Learning), change is the natural order of things. (Boisot, 1998)

TABLE 3: Relations between P2M main characteristics and underlying theories

P2M main characteristics	Theoretical development
Characteristic 1- Mission is shared in ambiguity (adaptive and implicit) rather than with clear definition (explicit) if innovative view is desired;	PM as a complex integrative field
Characteristic C2- P2M framework addresses implicit mission type and explicit mission type as well;	PM as a complex integrative field
Characteristic C3- Mission is a creative output from human insight capability combining rationality and intuition, explicit and implicit, linear and non linear approaches, divergent and convergent thinking;	Integrative epistemological approach
Characteristic C4- Mission is a ‘meta-model representation’ of the future ideality in a complex, ambiguous, uncertain world;	‘Modelling to understand’ that is to do ingeniously Modelling as ‘Convention’ generator
Characteristic C5- P2M focuses on a ‘Mission Driven Approach’ project management, which explores and includes value creation activity underpinned by Mission in complex, ambiguous and uncertain environment;	Integrative epistemological approach ‘Modelling to understand’ that is to do ingeniously Acting, knowing and learning within projects and programmes
Characteristic C6- Modelling is part of P2M. A programme reference model combining three models (scheme, system and service) represents a generic lifecycle from Mission to capital recovery through value creation;	‘Modelling to understand’ that is to do ingeniously Modelling as ‘Convention’ generator
Characteristic C7- Profiling and modelling are core methodologies powered by a combination of human insightful capability and scientific analysis;	‘Modelling to understand’ that is to do ingeniously Modelling as ‘Convention’ generator
Characteristic C8- Modelling is a generic approach which integrates interdisciplinary knowledge, methodologies and approaches.	Integrative epistemological approach ‘Modelling to understand’ that is to do ingeniously Modelling as ‘Convention’ generator