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GENESIS AND ROLE OF STANDARDS: THEORETICAL FOUNDATIONS AND SOCIO-ECONOMICAL MODEL FOR THE CONSTRUCTION AND USE OF STANDARDS.

By:
Professor Christophe Bredillet
ISGI – Lille Graduate School of Management
and
University of Technology Sydney

Institution Address

ISGI – Lille Graduate School of Management
70 rue du College – BP 5052
59705 Marcq en Baroeul Cedex France
Phone: +33 (3) 20 45 64 84
Fax: +33 (3) 20 45 64 68
Email: cbredillet@nordnet.fr - cbredillet@compuserve.com

UTS
Faculty of Design, Architecture and Building
Building 6, Room 501
702 - 730 Harris Street
ULTIMO, NSW 2007 Australia
Phone: +61 (2) 9514 8708
Email : Christophe.Bredillet@uts.edu.au

Genesis and Role of Standards: theoretical foundations and socio-economical model for the construction and use of standards.

Abstract:

A key issue for the economic development and for performance of organizations is the existence of standards. As their definitions and control are source of power, it seems to be important to understand the concept and to wonder about the representations authorized by the concept which give their direction and their legitimacy. The difficulties of classical micro-economics of establishing a theory of standardisation compatible with its fundamental axiomatic are underlined. We propose to reconsider the problem by carrying out the opposite way: to question the theoretical base, by reformulating assumptions on the autonomy of the choice of the actors. The theory of conventions will offer us both a theoretical framework and tools, enabling us to understand the systemic dimension and dynamic structure of standards seen as special case of conventions. This work aims thus to provide a sound basis and promote a better consciousness in the development of global project management standards, aiming also to underline that social construction is not a matter of copyright but a matter of open minds, collective cognitive process and freedom for the common wealth.

Keywords: standards, performance, project management, theory of conventions, micro-economics, socio-economic, system, dynamic structure.

Background

In any paper it is useful to introduce the motivations and to be clear about the reasons for writing it. Defining its scope, especially when the subject has a generic nature, is important as well. For some time we have perceived a need to try to clarify the foundations of the standards creation and use process in the field of project management or at least elucidate what these foundations could be.

Work done as part of standard development team member for Project Management Institute (PMI®), as member of the Global Working Group Standard (GPMF), of the Operational Level Committee Initiative (OLCI), member of ISO 10006 revising committee and, more generally speaking, global observer of standard development within the scope of project management, lead us to question the stakes, the content and the process of standardization. The first level answers are quite easy to find, although fundamental to consider. But beyond the appearances, and maybe unconsciously, the power aspect and the social game to control the field appears. We need to wonder what the appropriate paradigm is for the kind of project management, which is claimed to be able to deal with complex problems that do not have clear or straightforward solutions. The apparent lack of foundations, leading, perhaps, to theoretical error, underpinning the application of techniques and tools, the lack of a clear epistemological position in most of the research to date, the lack of a clear paradigm in most of the literature, seems, from our perspective, to be a real barrier to effective understanding and communication of the true nature of project management.

Standards are key factors, for economic and competence development. That implies to have sound foundation – deep understanding of the very nature of project management field – to create and to use them relevantly. This leads as well to the necessity to have a very clear understanding of the underlying forces in action within the process of creation and use of standards to be able to manage them efficiently. In this paper we are focusing on the following part: the genesis and the role of standards. As coherence is a key issue, and as the nature of project management implies it, our epistemological position in this paper, as detailed later, will be an alternative one. The theoretical approach and the method developed here will be aligned with this perspective, offering thus, hopefully, a sound framework to gain both a better mastery in standards development and use.

Standards: issues and considerations

Standardization is a big business. Globally, there are well over half a million published Standards. This does not take into account the innumerable internal Standards, which underpin any successful business. These half million Standards are the product of over 1,000 recognized standards development organizations worldwide (Standards Australia 2000). To illustrate the size of the work, the two main international standards organizations are the International Organization for Standardization (ISO) and the International Electrotechnical Organization (IEC). ISO involves the national standards bodies of 75 countries, has over 160 technical committees, 650 subcommittees and 1500 working groups, and has produced over 12 000 International Standards, representing more than 300 000 pages in English and French (terminology is often provided in other languages as well). IEC comprises the national electrotechnical committees of over 40 countries, has over 75 technical committees and 115 subcommittees, which have produced over 1500 standards.

Standhard!!! (Old Frankish war cry)

As starting point, it is important to present the word "standard". It has its roots in Middle English, from Old French *estandard* rallying point, standard, of Germanic origin; akin to Old English *standan* to stand and to Old English *ord* point and dates from12th century.

A quick look at Merriam-Webster's collegiate® dictionary shows its polysemic nature: from a conspicuous object (as a banner) formerly carried at the top of a pole and used to mark a rallying point especially in battle or to serve as an emblem to a musical composition (as a song) that has become a part of the standard repertoire, through something set up and established by authority as a rule for the measure of quantity, weight, extent, value, or quality…Consider the synonyms for *standard*: benchmark, criterion, measure, and touchstone. The central meaning shared by all these nouns is "a point of reference against which individuals, organizations, products and processes are compared and evaluated"; each of these words gives us a glimpse into the many roles standard-setting plays in our professional lives. (Cabanis 1999)

Let us quote the PMBOK® Guide 2000 definition: "a standard is a document approved by a recognized body, that provides, for common and repeated use, rules, guidelines, or characteristics for products, processes or services with which compliance is not mandatory".

This plurality of meaning is found in the roles standards are playing: securing the market, expressing social responsibility, self or peer regulation, and in their strategic use: need for explicit references, guidelines, recommendations, responsible and contextualised use… (Mary 1998)

Aims of Standardization

The aims of standardization should be made clear in order to avoid confusion but in general do not appear to have been specifically stated. However, as an example, these aims have been stated in British Standard BS 0: Part 1: 1991 A standard for standards. Part 1. Guide to general principles of standardization, as follows: a) to promote the quality of products, processes and services by defining those features and characteristics that govern their ability to satisfy given needs i.e. their fitness for purpose; b) to promote improvements in the quality of life, safety, health and protection of the environment; c) to promote the economic use of materials, energy, and human resources in the production and exchange of goods; d) to promote clear and unambiguous communication between all interested parties, in a form suitable for reference or quotation in legally binding documents; e) to promote international trade by the removal of barriers caused by differences in national practices; f) to promote industrial efficiency through variety control. The above aims very clearly apply for project management.

Value of standardization

A key facilitator for economic development: A recent research, initiated by DIN, the German Institute for Standardization, and the German Federal Ministry of Economic Affairs and Technology (BMWi) in 1997 and completed in May 2000, on the "Economic benefits of standardization" undertaken by the Technical University Dresden (TUD) and the Fraunhofer Institute for Systems and Innovations (ISI) shows that:

- Benefit to the national economy amounts to more than US$ 15 billions per year;
- Standards contribute more to economic growth than patents and licences;
- Companies that participate actively in standards work have a head start on their competitors in adapting to market demands and new organizations and technologies;

- Transaction costs are lower when European and International Standards are used;
- Research risks and development costs are reduced for companies contributing to the standardization process.

These results can be easily extrapolated to other countries and indicate the importance of standardization for economic development. As project management becomes *the* way to implement corporate strategy (Turner 1999, Frame 1994) and to manage a company, the use of project management standards is becoming crucial. At the company level "… *value is added by systematically implementing new projects - projects of all types, across the organization"* (Dinsmore 1999) and as well beyond the boundaries of a specific organization. Project management standards, enabling a more efficient and effective use of resources, are thus directly related to economic sustainable development.

A key role in individual and organizational competence development: Through projects, resources and competencies are mobilized to create competitive advantage, a source of value. As resources are easily shared by many organizations, competencies are the relevant driver. Thus, through projects, past action is actualized as experience, present action reveals and proves competencies, future action, discounted as projects, through experimentation lays the formation for new competencies (Lorino & Tarondeau 1998). Competencies (both individual, team and organizational) are at the source of competitive advantage and creation of value (Stata 1989, de Geus 1988). International research programs are currently concerned with these issues: For example, Lynn Crawford, directing the Project Management Competence Research Project, writes that "*interest in project management competence stems from the very reasonable and widely held assumption that if people who manage and work on projects are competent, they will perform effectively and that this will lead to successful projects and successful organizations"*. (Crawford 1998) A working paper (Turner 1998) shows the influence of the project managers on shareholder value: "*Projects are undertaken to add value to the sponsoring organization. In the private sector this ultimately means increasing the value of shares to the holders of equity in the company"* (see also Hartman 2000). But performance is also related to the maturity of an organization; its capability in dealing with projects, especially through the aspects of learning. The OPM3 standard research program (PMI Standards Committee), and other papers (among many others Fincher and al 1997) and books (Frame 1999, Hartman 2000, Kerzner 2001) explore the relations between organisational maturity, project success, and performance. The issue is important within the context of globalization of the profession (Curling 1998).

How standards are developed

Standardization is, for the most part, a grassroots, democratic process that results from businesses and organizations choosing voluntarily to develop guidelines for themselves. But without a central forum for the recognition of standards, democracy would quickly devolve into chaos.

Their development rests on some few general principles. For American National Standards Institute (ANSI) (Holtzman 1999), Cardinal Principles are: *Openness* – Any materially affected and interested party has the ability to participate. *Balance and Lack of Dominance* – Consensus body shall be representative of the members and affected parties. *Due Process* – All objections shall have an attempt made toward their resolution. Interests who believe they have been treated unfairly shall have a right to appeal. *Consensus* – More than a majority but not necessarily unanimity. ISO standards are developed according to the following principles: *Consensus* **–** The views of all interests are taken into account: manufacturers, vendors and

users, consumer groups, testing laboratories, governments, engineering professions and research organizations. *Industry - wide* – Global solutions to satisfy industries and customers worldwide. *Voluntary* – International standardization is market-driven and therefore based on voluntary involvement of all interests in the market-place.

There are three main phases (6 stages) in the development process (ISO standards): The need for a standard is usually expressed by an industry sector, which communicates this need to a national member body. The latter proposes the new work item to ISO as a whole. Once the need for an International Standard has been recognized and formally agreed, the first phase involves definition of the technical scope of the future standard. This phase is usually carried out in working groups which comprise technical experts from countries interested in the subject matter. Once agreement has been reached on which technical aspects are to be covered in the standard, a second phase is entered during which countries negotiate the detailed specifications within the standard. This is the consensus-building phase. The final phase comprises the formal approval of the resulting draft International Standard (the acceptance criteria stipulate approval by two-thirds of the ISO members that have participated actively in the standards development process, and approval by 75 % of all members that vote), following which the agreed text is published as an ISO International Standard.

The role of Bodies of Knowledge

The development of competencies based on standards, and of standards, implies to have relevant bodies of knowledge. Definition of bodies of knowledge (broad range of knowledge that the discipline encompasses plus some behavioural characteristics) certification and assessment of project management competence models, maturity models and best practices reflect this trend (see among others: Toney & Powers 1997, Bredillet 1999, Frame 1999, Miller & Lessard 2000, Gareis 1997, 1998, Hartman 2000, Kerzner 2000, Cooke-Davies 2000).

Three main approaches can be identified among the attempt to clarify the field (GPMF Global Working Groups 1999). The first relates primarily to the management of projects (ISO 10006, PMBOK® Guide 2000). The second is designed primarily as a standard set of guidelines to define the work of the project management personnel and as a basis for the assessment of the competence of project management personnel. The IPMA Competence Baseline and the Australian National Competency Standards for Project Management (ANCSPM) are good examples albeit different in their perspectives and coverage (Turner 2000a, Turner 2000b, Morris 2000). The third is directed at PM organisational practice (current PMI project OPM3 on PM Maturity Model). We could add to this the P2M Guide (A guidebook of Project & Program Management for Enterprise Innovation, Engineering Advancement Association of Japan, Project Management Development Committee, 2001).

The control of the field

Consider Audet's definition (1986) *"a knowledge field is the space occupied by the whole of the people who claim to produce knowledge in this field and this space is at the same time a system of relationships between these people. Those persons are competitors to gain the control of the definition of the conditions and the rules of production of knowledge"* with respect to the behaviour of professional bodies, authors, academics.

For example, the relationships between established professional bodies (PMI, IPMA – International Project Management Association…) and their way of development (PMI, through PMBOK® Guide; IPMA, through a shared competence baseline (ICB – IPMA

Competence Baseline), contextualised according the nationals needs of the national associations, the fact the PMI Headquarter withdraws from the Global Project Management Forum (GPMF), kind of supra-institutional body trying to promote a common basis in term of knowledge, the wish to create global standards, the fact that PMI is very active in supporting research in such as establishing a theory of project management, demonstrating project management value for executive, achievement of corporate strategy through successful projects, to quote a few, the evolution of bodies of knowledge (PMBOK® Guide, APM BOK…), of the themes of papers and books, from techniques to psycho-sociology of temporary groups through knowledge creation and organisational learning, illustrate this. In addition, the field, currently characterised by this abundance of initiatives, development of standards, increasing use of project management methods and techniques, this field is in pre-paradigmatic phase according to Kuhn' sense (1983). It is actually the place of a revolution, inaugurated by a growing sense, still restricted to a narrow subdivision of the project management community, which the existing positivist paradigm has ceased to function adequately in the exploration of the nature. A second and more profound aspect upon which the significance of the first depends is that the success of revolutions necessitates the partial relinquishment of one set of institutions in favour of another. Is it the sense of the creation, in the USA, of an alternative professional body (ASAPM – American Society for the Advancement of Project Management) to PMI with different rules (in particular, much more flexible about the legal aspects and copyright rules, the aim being to make knowledge produced by the members available and usable by the community in large)?

This reflects that standardization takes place in two different ways: market exclusion, and joint modification. Market exclusion refers to a process in which initially several distinct methods are available in the market, but as time passes and the market evolves, the market share of one of the methods increases and approaches 100 percent. The others are effectively excluded from the market, and standardization has taken place. When standardization occurs through market exclusion, there are no degrees of standardization or compatibility; standardization either takes place – all but one method are driven from the market or it does not – several incompatible technologies share the market. By contrast, when standardization takes place through joint modification, degrees of standardization or compatibility are admitted. In this process more than one method survives in the market, but users of different methods desire interconnectivity. This leads either to modification of the methods, or to the development of gateways which allow interconnectivity through a translating method. In either case several methods survive but interconnectivity is achieved none-the-less, though at the cost of methodological modification. Clearly, the degree to which they are modified, or the degree to which the gateway methodology is effective, will determine exactly how interconnected the methodologies become. It may not be cost effective to develop methodological solutions to implement every possible aspect of interconnection. Thus degrees of standardization can emerge. Joint modification (including the development of gateway methodologies) only takes place when several methodologies survive and users desire some form of communication or connection among them. In this situation, users have two choices: they can either modify their methodologies; or they can agree (tacitly perhaps) on a standard methodology, requiring that those not already using it switch. Joint modification will take place if the cost of modifying the methodologies is less than the cost of this switching. Costs of modification include the development and installation of the methodological changes, whereas switching costs include costs of acquisition of new physical and human capital as well as the loss of any function that was unique to the abandoned methodology. At the global level, switching costs will exceed modification costs if there is a large installed base of users, if the cost of capital acquisition is very high, or if the current

methodology is unique in providing a very valuable function. In any of these cases, we observe a group of users who are effectively locked in to a methodology because the costs of switching away from their methodology are too high to bear. Thus, prior to any standardization by joint modification, we will observe mounting forces of methodological lock-in within a group of users, something often associated with market exclusion.

As the above considerations show, the proper development of standards is a key issue, especially within the specific context of project management, with competing professional bodies, without well established knowledge field, although moving in depth, breadth and its paradigmatic constitution. Furthermore, the ongoing adaptation of the different standards according to the change in economic environment becomes a main issue. Most standards require periodic revision. Several factors combine to render a standard out of date: technological evolution, new methods and materials, new quality and safety requirements. For example, to take account of these factors, ISO has established the general rule that all ISO standards should be reviewed at intervals of not more than five years. On occasion, it is necessary to revise a standard earlier. The current development of bodies of knowledge and reengineering of standards – new PMBOK® Guide 2000 (last version was from 1996), the evolution of the PMI® certifications (PMP, CAQ, PMA…), the reengineering of the French project management standards on behalf of AFNOR, the new Japanese P2M – are examples of this trend. Standards, considered as socio-economical constructs as we will see later, are the result of negotiation enabling reduction of complexity and uncertainty in the relations between the stakeholders of projects. But the global evolution of the environment changes the bases of the negotiation, and hence standards need to evolve in a dynamic perspective. Thus, we need to understand the nature and the dynamics of standard development to be able to address efficiently and effectively these issues.

Genesis, role and dynamic of evolution of standards: contribution of theory of convention

The former considerations let us think that it seems to be relevant to question the economic theories to justify the development of the standards, and to understand their underlying roots and dynamics, because they are parts of one of the central questions of the economy, since A. Smith, in fact, of its constitutive question: which are the mechanisms of coordination by which the economic agents adjust their decisions within the framework of a decentralized economy? Standard economic sciences do not consider this point (for standard economic sciences – market: exclusive form of coordination of the agents, unlimited rationality and information available to select the optimal decision – no asymmetry, no uncertainties not probabilisables, agent: homo oeconomicus). It is about to understand how the economic agents coordinate their actions beyond even bargaining forms of coordination strictly speaking. That implies to analyze the way in which the markets (in the broad sense of interactions of supply and demand controlled by a mechanism of price) are organized to be able to function, to analyze the non bargaining interactions which structure the organizations and allow them to face the situations of market.

The stakes are both of a micro-economics nature, the objective being, on this level, to find the existence of the organized forms of the economic activity and to deal with the problems of them, and of a macro-economics nature, being here about to explain the macroeconomics dysfunctions which seem unintentional effects of individual behaviors.

One may see that a general approach of the mechanisms of coordination is today at the center of the economic analysis. Researches about the mechanisms of coordination are commonly

gathered under the term of "theory of the contracts" and include theory of the agency and the incentives, theory of costs of transactions, theory of the regulation and theory of conventions. From the very nature of the concept of standard and the freedom of adoption which is attached, we have opted here for an approach using the theory of conventions. That can be justified as well by the epistemological alternative position retained for this work, this theory combining positivist and constructivist principles following the currents of thoughts.

Definition of an economic convention (Lewis 1969)

Being P a population made up of I individuals. Let us suppose that each individual has to choose between two solutions *0* and *1* to solve a problem.
We will say that there is convention if: whatever the individual *i* of a population P, the utility which gets for *i* makes it choose *0* is identical to that to choose *1* provided that a number of agents equal to *P* performs the same choice as him.
One will call *P* the critical mass of the adopters with which convention is associated.
By noting Ui the functions of conditional utility of agents i:

$\forall i \in P, \exists Pi / Ui(0 ; Pi) = Ui(1 ; Pi)$ with $Pi \cong P$
and $Ui(0 , 0) = Ui(1 ; 0) = 0$

Convention establishes itself as essential because the utility an agent gets choosing *1* or *0* is conditioned by the fact that the other agents choose all in the same direction as he does.
Let us note that one can easily remove the assumption of unanimity. A convention can accept a margin of population of reference. It is enough to introduce, in preceding formalization a population P*, with the condition $P^* \approx P$. P* is called the threshold of population. $P - P^*$ constitutes the marginal ones which confirms, by antithesis, convention as long as their population remains weak.

There is convention when each individual knows that the general choice will be 1 or 0. One will say that it *adopts* convention. However by doing this, it contributes, like the others, to create it. The generalization of the behavior led to the effective *existence* of a procedure of resolution of problem, which, apart from any calculation, states an optimal solution *because shared.* Then it exists a convention, known as evolutionary stable within the meaning of Sugden (Sugden 1989):"an evolutionary stable equilibrium is a form of behavior such as if it is generally followed within a population, every small group of individuals which is not following is less successful than those which follow it"(p. 91)

Thus the General Axiomatic can be described as follows:
A1: a convention appears in a situation of radical uncertainty in which the utility for an agent is unspecified apart from the anticipation of the utility of the other agents of the population.
A2: a convention is a regularity which solves in an identical way the identical problems of coordination. It substitutes then for individual calculation.
A3: it obeys to the five conditions known as of Lewis:

1. Each one conforms to convention
2. Each one anticipates that everyone conforms to it
3. Each one prefers a general conformity to one less than general
4. There is at least another alternative regularity
5. These the first four conditions are "Common Knowledge"

What is not a convention

By analogy with the apophatic theology, things are also well defined, when they are complex, by what they are not. So let us state what is not a convention:

- a convention is not a market, within the meaning of standard micro-economics
- A convention is not a simple mimetic behavior. The regularity is necessary (procedure of resolution of problem known and systematically applicable before the problem happens)
- A convention is not a contract. It is a collective cognitive process. It is substituted in for individual calculation proposing a canonical and indisputable solution to a problem of uncertainty. *The agent remains free to adopt it.*
- A convention is not a "cultural practice". It makes it possible to exceed the culturalist explanations, as a general model of representation, scientific object "in oneself", founded on structural methodological invariants (the individual, the form "convention") allowing modeling of the phenomena. It must maintain the analyses which it produces in universal considerations, compatible with the status of social sciences, and consequently to apply in different socio-economic contexts, making emerge comparable modes of adjustments for which cultural dimension (race, nation...) does not present a sufficient justification.

About the important issue of convention and personal freedom:

A convention makes it possible to understand the existence of collective forms, while maintaining the freedom of the individuals. The agents, when they choose it, build implicitly and at the same time a procedure which constrains choices. When this one continues, there is convention, i.e. a cognitive framework which gives its direction to the choices. Thus, the convention exempts the actors of calculations on the arising problem. But it does not prohibit calculations *within* the procedure. The adopters are not prisoners of convention, just as convention is stable, but not fixed. It is the personal freedom of the actors which allows the evolution of it. The whole includes the unit but does not reduce it. *Any definition of a perception defines at the same time the perceived and the process which led to it.* The conventionalist dialectics allows understanding these two terms simultaneously, since a convention exists at the same time thanks to each agent and apart from them.

The synthesis of the theoretical bases of our approach is presented in Figure 1

Figure 1: Synthesis of theory of conventions

The dynamics of evolution of standards

Speaking today about standardization means less to consider one simple adjustment to standards than to define a certain state of the social relations between stakeholders centered on the "customers" or "users" and on the aptitude to satisfy their expressed or implicit needs.

Thus a standard, like convention, can be seen like a structure of coordination of the behaviors offering a procedure of recurring resolution of problems. It delivers a statement, information on the identical behaviors of the parts which adopts it, and is carried out in a hardware device in such a way that the interpretation of this information remains compatible with the maintenance of the collective procedure. It composes a dynamic structure which evolves under the influence of "suspicions" in face which it can resist, break down or move (Gomez, 1994). Standards, or conventions, are thus suitable systems for evolution. This evolution can be located thanks to some general tools for analysis. Three principles are to be considered: 1. The initial and final states are locatable by complexity. 2. The internal or external stress is given by the suspicion of convention. 3. The function of behavior is the maximization of coherence under constraint of suspicion. From there, three possible forms of evolution are deduced (resistance, collapse, shift) of which occurred depends on the initial conditions of the

problem (level of complexity, relative level of coherence of suspicion compared to convention). This gives us a coherent representation of the dynamics of the standards or conventions (see Figure 2).

Figure 2: The dynamics of standards

The left part of Figure 2 points out the two initial conditions - Which is the relative coherence of suspicion compared to convention? Which is the complexity of this convention? Cases 1-2-3 represent three figures of possible dynamics. Case 1: Convention is close to a polycentric form (high degree of freedom in interpretation), therefore very coherent and very adaptable (able to become more and more complex since its initial complexity is null). We recall that the generalization of suspicion is difficult, taking into account the great coherence of convention. Nevertheless, if it imposes itself, the reaction of convention thus consists of a resistance, therefore an increase in its complexity. In other words, it absorbs suspicion. Case 2: Intermediate situation. All will depend on the coherence of suspicion. If this one is very large in front of that of convention, the latter can break down and disappear. If not, it will adapt as in the preceding case by increase in its complexity. Case 3: The generalization of suspicion is, there too, difficult, taking into account the coherence of convention. If it occurs nevertheless, we are in extreme cases of the possible complexity of convention. There cannot be resistance. The alternative consists then either in the collapse and the disappearance of convention, or in its change and its shift. One sets out again then in a new dynamic loop.

The systematic steps to analyze the evolution (of quality) of standards can be summarized as follows:

Why does the apparent quality of the standards evolve?	Because conventions which support them evolve
Why do conventions evolve?	Because they undergo a suspicion of convention
How do conventions evolve?	According to the initial conditions which characterize them
Which are these conditions?	That concerning the markets (extensive growth vs. intensive, penetration by change of rules...). Those concerning the firms: are they resistant, adaptive?
Why are there evolutions?	To thus maximize relative coherence, factor of performances of profit
Which is the indicator of the qualitative development of the professions and the organizations?	Quality connects standards (return has the first box)

Table 1: systematic step of analysis of the evolution of quality

Two main trends in the use of standards

It is interesting to point out the two main trends of uses of the concept of convention: a) An "American" approach, dependent on micro-economics and its formalizations. In the logic of micro-economics, it seeks to work out a universalist model of the construction of the firm; b) A "French" approach who is located more clearly at the confluence of the economy and sociology. The form "convention" is, with the rules and parallel to the contracts, the means by which are adjusted the intersubjective behaviors (see Figure 3)

Figure 3: Polarization of information by a convention

We notice here two visions of the world which condition the strategic behaviors of the professional associations. Two different philosophies are in presence: a) one (PMI®), centralizing and betting on the standardization tending to spread in the whole world a primarily North-American vision. It will certainly be appropriate for the "Global" companies in their concern of simplification and better global control of competences and organization, and with the people who believe in the effectiveness of this model; (b) the other (IPMA, GPMF, OLCI...), more respectful of the local cultures, than it proposes to organize according to a comprehensive framework of coherence. It will be better appropriate to the companies and to individuals who believe in the richness of the diversity of the local approaches while having common landmarks.

A concept map

From the study of these two types of use, it appears useful to propose a map of the economy of conventions (see Figure 4). We accept by advance all criticisms that one will object to us, by stressing that it is about a simplistic but convenient location rather than of an epistemological study.

We oppose two terms:

- On the one hand, the structuralist or functionalist character of the model, i.e. its intention to propose like a conceptual framework allowing reading reality, or on the contrary like an objective form observed as such in the real and concrete situations and thus composing reality.
- In addition, primacy of economic issues on social issues. With an extreme, the behaviors of the actors are isolable as such and explain how social issues are woven, the "viscosity" of the intersubjective relations. It is the point of view of standard micro-economics. With the other extreme, social issues are a data, an "opacity", in which are defined the individual behaviors. It is the traditional point of view of sociology.

Figure 4: Map of the economy of conventions

It helps to understand the "conceptual" (often underlying) perspective of professional bodies, companies, organizations… supporting the development of standards and thus the underlying logic of these ones. It is of great interest to understand the hypotheses leading to use them properly and consciously.

Conclusion

In conclusion of this presentation, we can thus highlight according to the approach adopted here: a) that standards can be seen as socio-economic constructs reflecting a balance of perspective between stakeholders defining them and adopting them at a given time - the development and evolution processes of standards (ISO, ANSI, for example) illustrate this in their expression; b) that those are prone to evolution in the course of time, according to the change of the balance of perspective between stakeholders (see also for example the evolution of the PMBOK® Guide); c) that there is not the single form of standards, but plurality of natures and ways of development; d) that, under the angle of the theory of conventions, a standard is independent of the cultural aspect; e) that a standard is a form of resolution of problems by anticipation inseparable from a collective cognitive process, which is fundamental in term of creation of value both on economic and competence point of view, these ones being interrelated; f) that the agents are free to adopt such or such standard (or to adopt none ...). These some conclusions will challenge probably the reader implied in the activities of standardization.

Further developments of this work are to be done in three areas: 1) the first founds a theoretical framework that makes it possible to define the standardization like a conjunction between convention of effort and convention of qualification. There are fixing the rules; 2) the second proposes a synchronic perspective: these are the matrices of internal and global coherence. They place in relation morphologies of the two kinds of conventions and make it possible to apprehend the systemic logic of the problem, and the interactions of the elements which compose each of them; 3) finally the third is of diachronic nature: it is the grid of the standards. It builds a space of localization of the standardization, relative with the forms of conventions which found it.

We hope, through this work, to have contributed, humbly and imperfectly, to a better understanding of the nature of standards and why and how they evolve, enabling a more efficient and effective way to manage dynamically them, in the perspective of theory of convention, as they have a significant impact on economic and organizational development.

Furthermore, we strongly believe that the use of economics theories to enlighten some aspects of this discipline provides both foundations and a path toward its scientific recognition. This implies to consider its alternative epistemological nature and leads to better understand its complex theoretical foundations, source of sound methods and value-added practices enabling improved performance for organizations and society.

Ordo ab Chaos.

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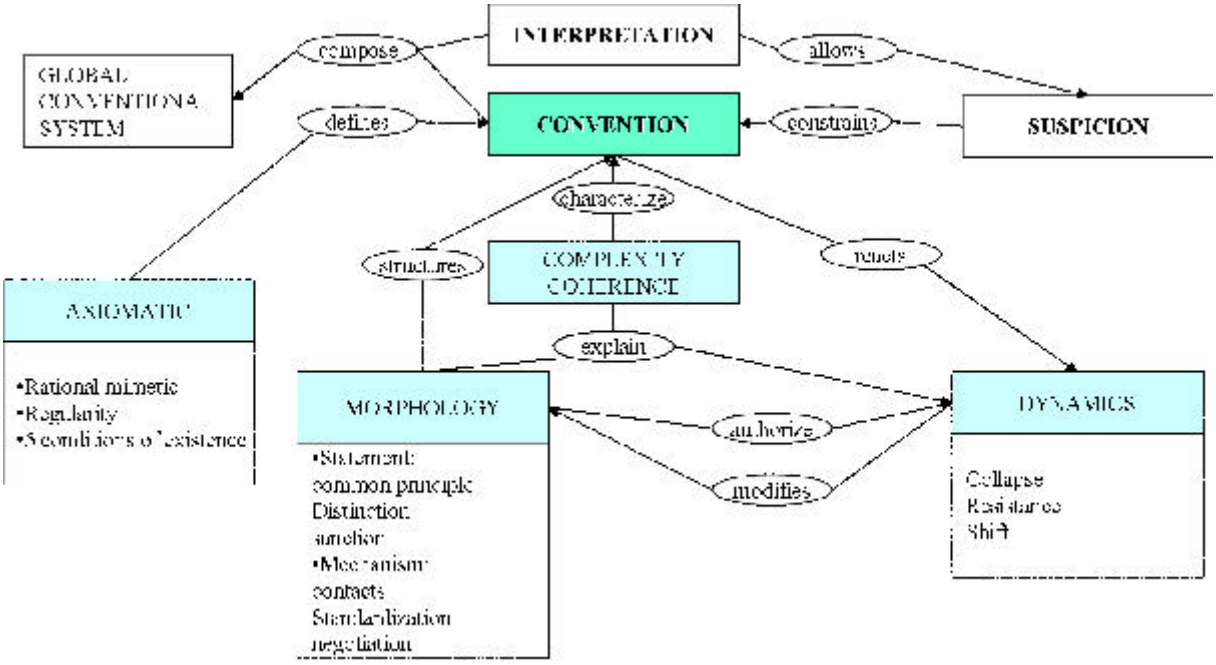

Figure 1: Synthesis of theory of conventions

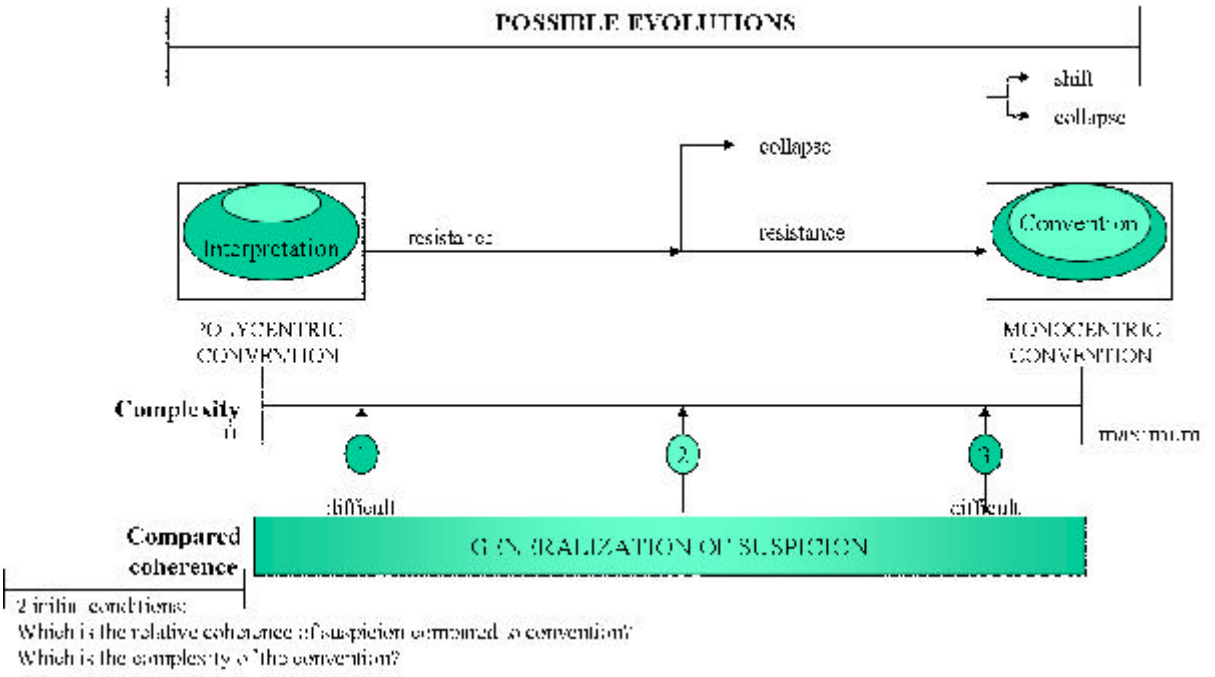

Figure 2: The dynamics of standards

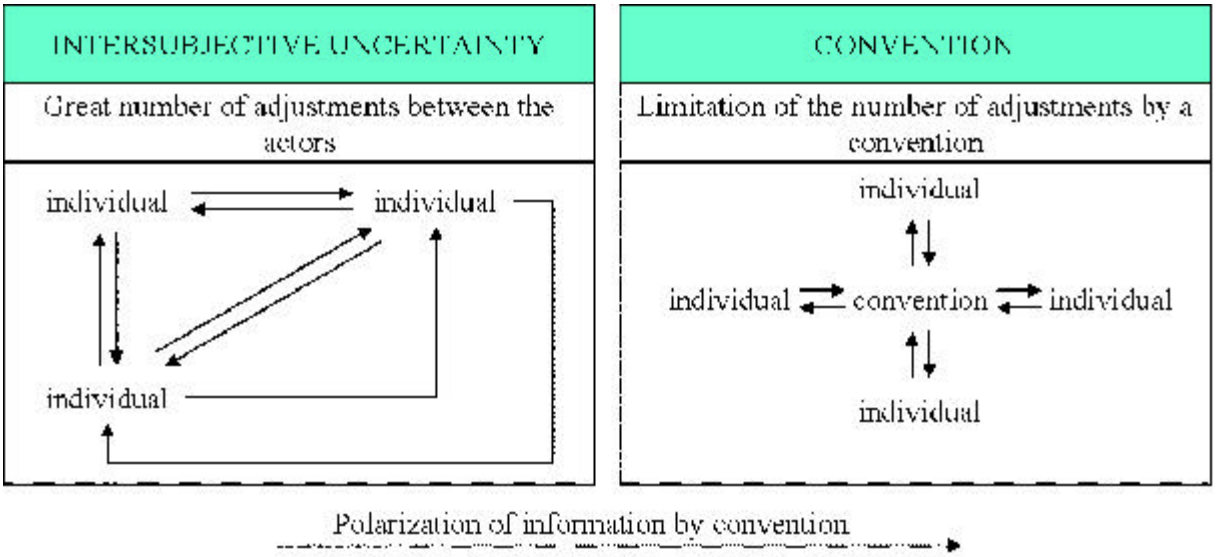

Figure 3: Polarization of information by a convention

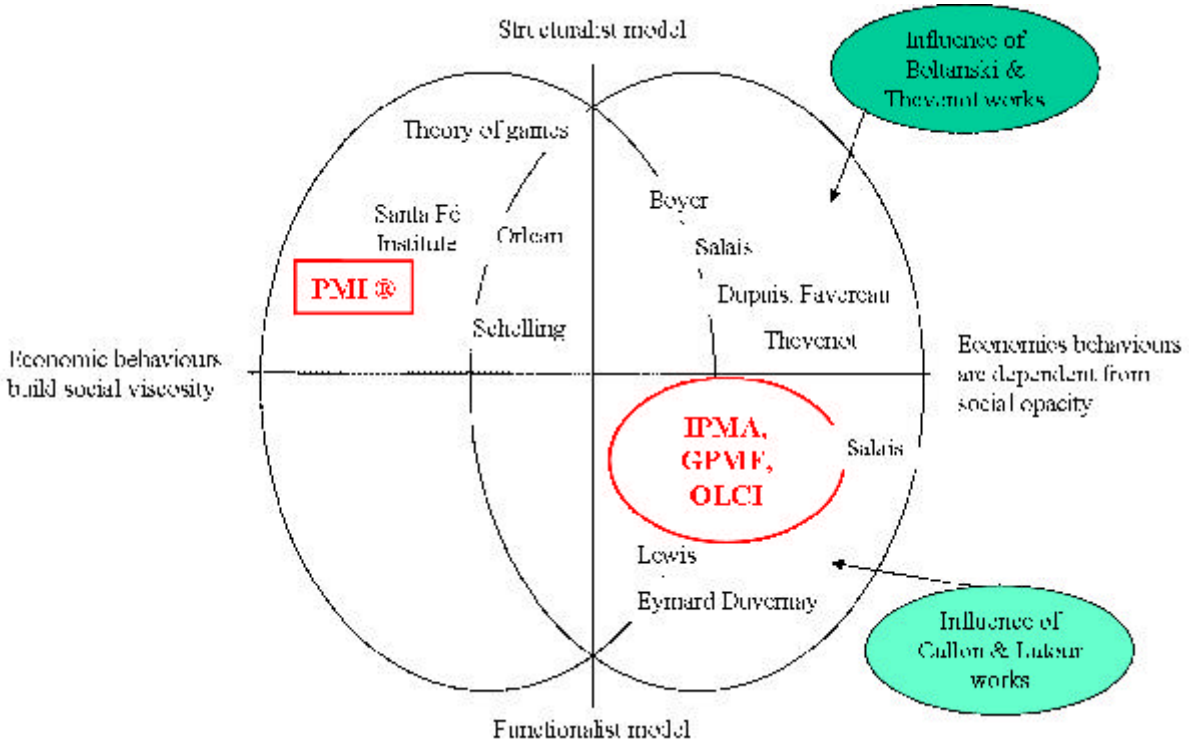

Figure 4: Map of the economy of conventions