

Organizations Between Systemic and Epistemological Complexities. An Introduction

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1. - Overview of the Topic

An organization is an entity made up of people who together perform activities to achieve a common purpose. This is the solution generally adopted to deal with a minimum level of systemic complexity, that is with the condition generated by the presence of a significant number of dynamically interrelated and mutually-affecting variables. In fact, organization stems from the need to channel the efforts necessary to carry out activities characterised by a wide array of aspects and problems.

Science of organization is nowadays characterised by a twofold dimension, equivalent to double faces of the same coin. On one side fields of main investigation can be depicted, on the other side refinements around structural properties of concepts such as systemic and epistemological complexities can be appreciated.

With regard to the first side of the coin, among the main investigated area we find: *a)* the characterisations assumed by the organization, considered in an international context, in connec-

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tion with the internal and external changes prompted by modifications in the political-cultural situation, socio-economic conditions and technical and technological variables; *b*) the “state of the art” of the organization theory, that is the ensemble of systemised scientific knowledge on organizations.

As far as the characterisations of organizations, over the last decades remarkable historic events spurred the search for new and suitable organizational configurations. Such events are represented by internationalisation and globalisation (though keeping a watchful eye on the local dimension), but even more by compelling human problems (i.e. population growth and environmental degradation), and by unimaginable and incredible scientific and technological progress. It is no coincidence if nowadays we are witnessing a significant proliferation of organizations of all types, as well as their growing size and commitment to the frantic search for new and more effective operational solutions.

One theory (which is widely supported) puts forward to explain the above concurrence of factors is that the growth of systemic complexity in modern times must go hand in hand with an increasing focus on organization as an “antidote” to this complexity.

As far as the theory of organization is concerned, among scholars is quite widespread the awareness that organization requires more and more an interdisciplinary approach, due to the fact that aspects that characterized the life of the organization are so numerous and interconnected that an approach other than interdisciplinary would amount to ignoring their existence or, at least, deliberately underestimating them¹. This implies to recognize that each organization is significantly influenced one way or another by human, cultural, political, economic, social, tech-

¹ The main disciplines which nowadays are contributing to through new light on organizational dynamics are: Sociology and Business Organization, Economics and Economic Policy, Labour Economics, Labour Sociology and Business Management, Philosophy of Science and Psychology, Business Economics and Mechanical Engineering, Economics of Financial Intermediaries and Corporate Finance, Statistics and Labour Law, Applied Economics and Commodity Science.

nical (or material in the various manifestations possible), technological factors.

With regard to the second side of the coin, a great consideration to the systemic and epistemological complexities of the subject at hand is emerging, which, in turn, justifies — at operational level — the proliferation of organizations in modern times, as well as their variety and average sizes.

The systemic complexity generated in the current period by rapid changes is producing significant scientific efforts to study the approaches adopted by organizations in order to become successful, and the extent to which past theories can explain present conditions.

Among the new conditions, the elements most frequently referred to — by the scholars — concern, on one hand, the implications that the new “dimensions” have for organizations, or better, their perceptions of time and space and, on the other hand, the new opportunities. However, reference are frequently made also to some of the emerging threats from the technologies currently available to organizations: from information and communication technology — absolutely vital for each organization — to all the others, which assume different significance for the various types of organization.

At the same time, while scientific analysis is applied to existing practical solutions, to determine the degree of their uniformity, specificity and individuality, such important process — i.e. techniques and technologies transfer — is also known to have economic benefits for both firm and stakeholders. It must be stressed, in fact (but that is obvious), that the solutions which make it possible to cope with systemic complexity, as well as their diffusion, are achieved through the operational effectiveness of organizations. In this way, the organization — considered not only as the centre of systemic and epistemological complexities, but also as the source of the solutions to problems posed by the organization itself, as it is physiologically suited to dealing with complexity — legitimately becomes one of the key drivers of firm competitiveness.

2. - In Search of a Plausible *Fil Rouge* Across the Special Issue

In what follows we do not attempt to provide with a full survey of the collected papers and of the principals issues raised by the various contributions. Rather we develop a brief critical analysis for the reader, designed to illustrate an interdisciplinary *fil rouge*, deemed useful for continuing scientific research in this field.

The reader will realize that in some parts there are some overlaps (and also some conflicting arguments), but we consider that they are indeed to be welcomed as they indicate both inquisitiveness and vitality.

2.1 *Organizational Invariance, Convergent Changes and Ethical Behaviours*

Productive organizations are subject to various forms of pressure, interference and modification. These instability factors suggest that organizations are undergoing significant changes. Recent developments, such as the diffusion of new ICT technology, new methods with which managers seek external and internal competitiveness, the search for a functional size for the company, new strategies to build “core competences” in businesses, new ways of managing human resources and new industrial relations, are going to leave their mark on traditional organizational models.

In the initial paper, Scott highlights and analyses the changes which characterise the organizations at the beginning of the new century. He looks at them in the production-oriented enterprise, in business strategies, in the organizational forms and components, comparing them to those characteristics which he considers to be of a permanent nature. The most important final product of these changes is a modification of the concepts of organizations: the “substantialist” representation of the productive organization, where entities and things rank high, is giving way to the vision of the organization as a system of relational processes (Weick, 1969), which do act as an “organizing force”. This vision

goes beyond structures (entities or things), and embraces elements which range from words to symbols, from relationships to contracts, from assets to other things. According to this conceptualisation, structures are merely the product of the constant, intense activity of the actors, aimed at building and re-building their own and other people's intentions and identities.

The reference to processes, to the breaking down of the hierarchical nature of structures (with the consequent support of a more collective organizational responsibility, such as that of teams) and to peripheral responsibilities is, moreover, present in various contributions collected in this "special issue".

In her paper, after having stressed the importance of the terms "organization" and "organizations", Grandori states that today — now that we have overcome the conceit of the structural contingency school of the 1970s — a tendency is emerging which once again places at the centre of attention the "core" of organization as science and as a problem of design, based on the results of research which show how some traits of effective organization — theoretically considered as an "ideal-type" or empirically correlated with superior firm performance² — appear "universalistic" rather than "contingent"³ (Pfeffer, 1994).

For a successful and innovative company, a combination of decentralisation, de-regulations, informality, and knowledge-based community-like organizing would represent these invariant traits. To this end, economic research has provided particularly interesting results in this area⁴, but it has not yet led to the identification of robust, indisputable, "stylised" traits. From a theoretical perspective the fact that there is not (so far) a unique performing bundle of new traits across firms implies that there is not a "one-best way" to build a flexible firm and to develop an effective dynamic organizational capability. This might be due to the fact that

² See, in this direction, CRISTINI A. *et AL.* (2003a), (2003b) and MAZZANTI *et AL.*, in this collection, and the references literature reported in these papers.

³ Contingent to some relevant "states of world", such as: environmental dynamics and uncertainty, institutes' strategies, technology, type of interdependence, system size.

⁴ See references in footnote 2, and LEONI R. *et AL.* (2004) for a review of the international literature on the subject.

managers very likely begin the introduction of changes from different starting points, owing to the persistent heterogeneity of the firm's configuration. However, we cannot rule out the fact that they undertake their own unique paths coherently with their "wel-tanschauung", that is their way of tackling organizational re-design.

What appears quite well established in the related literature is the theory of "organizational complementarities" (Milgrom and Roberts, 1995), while, in our view, some doubts are instead raised by the otherwise interesting theories put forward by Grandori, concerning the effective possibility of business to combine in a performing way: (i) incentives and high hierarchical structure; (ii) trust-based, team-like organization and shifting participation and temporary association; (iii) intrinsic, and even altruistic motivation and utilitarianistic institutes and economic action; (iv) "alternatives" in democratic governance among stakeholders, or — according to the pendulum law — oscillation between centralised and decentralised organizational arrangements. The reasons for our doubts lie in the fact that some of these pairs seem to incorporate factors which are difficult to reconcile. That is to say, some of these factors seem to belong to conflicting theoretic sets, or, in any case, sets which do not seem to be in accordance with each other.

The theme of human behaviour and research into the existence or not of a plurality of motivations behind actions (individualistic, altruistic, *etc.*), which forms the basis of the question Sen (2000) poses, is at the centre of the analysis developed by Caselli.

Does the undeniable pluralism of values, of evidence of moral codes, of behaviour, have to lead to a development only of "procedural" ethics or should it encourage the search for an ethical code which is objective, universal and anthropologically founded? We will refrain from answering this important question now and leave it to Caselli's paper. For the time being, instead, we will limit ourselves to the subordinate question of the extent to which alternative organizational structures (such as the Taylor-Ford-style organizations on one hand, and "lean organizations" on the other) influence motivations. The alternative structures differ ac-

ording to the opposing degrees of involvement and participation they imply. It is broadly accepted that the first solution is based on a planning of the individual jobs, and on the requirement for those who fill these jobs to carry out pre-established tasks in such a way as to manufacture “the best” product or deliver the best service. In this structure the hierarchy is devoted to the control and co-ordination of the “core force”.

In contrast, the second organizational structure concentrates on the decentralisation of responsibilities right down to the peripheral levels of the workforce, so that each ‘role’ is performed with responsibility, participation and knowledge. Moreover, it concentrates on teamwork and on the conscious and relational involvement of everyone concerned in order to improve their competence in the role performed, to develop new understandings and produce new knowledge.

There is no doubt that the European Commission (2001) refers precisely to the first structure, when it states «the traditional models of organisational behaviour and strategic management have proved to be inadequate». Likewise, there is no doubt that a broader distribution of responsibility (emphasised by the second structure) is — according to Caselli — not only in accordance with business logic, but must be considered as an integral and essential part of its strategic programming so that it is a genuine managerial attribute, in order to manage efficiently and effectively interdependent processes, complex productive systems, as well as idiosyncratic social and institutional relations.

2.2 Ethical Managerial Targets, Emotions and Motivation

The analysis of the governance, corporate and social responsibility concepts carried out in Urban’s paper enables the author to develop a series of ideas around reasonableness and ethics for managers, where the objective is not only the maximisation of profit, but also the survival and development of the company in the long term. The new vision of a company’s success stated by Urban goes beyond purely financial aspects, recognising the cru-

cial factors of managing human capital and providing continuing education, integrating diversity, promoting development of competences, supporting strong relations among employees and stakeholders. For this purpose new management tools have been created, such as the “balanced scorecards”, suitable to account for — in the name of disclosure and transparency — the so-called “intangible assets”, which nowadays the most strategic (and socially responsible) decisions by employees, shareholders and stakeholders could or should refer to.

The research into the motivations behind organizational actions is picked up on again in the work by Ramus and Killmer, with a very useful distinction between primary tasks and peripheral (and optional) actions. In their analysis the authors refer the latter to environmental aspects, but we believe that the arguments developed are suitable and extensible to many other peripheral or non-central tasks carried out in the workplace, in particular in our case, organizational improvements and learning.

Employees tend to be selected for their ability to perform the primary tasks of their job (which can be defined as tasks to be executed or roles to be interpreted), and consequently are considered central by supervisors. They are perceived as primary responsibilities also by employees, since they represent a reliable source of salary, job security and social relations. With regard to primary tasks several modern approaches have been developed, with the “big-five” receiving a substantial and convergent consensus among esteemed researchers.

Secondary tasks, defined as creative ideas, initiatives and organizational learning coming from individuals or teams of employees having the potential to improve the firm’s performance, are hindered by the fact that they usually tend to be peripheral activities. As such, the traditional motivational theories are not applicable, because they are not tailored to promote optional behaviours with a very general goal.

According to the authors, Vroom’s expectancy theory (Vroom, 1964) — one of several motivation theories — can be adapted to a suitable framework to explain employees’ motivation for organizational improvements and learning. This amended model in-

cludes: (i) variables for supportive behaviours from the direct supervisor (for example, as coach, trainer, mentor, but also information dissemination, communication, rewards and recognition); (ii) perception of social norms (that is, the social belief about the 'goodness' of the behaviour as defined by a person's reference group or social network); (iii) personal attitude (that is, a person's pre-existing values, beliefs and habits related to a given behaviour — in our case learning, creative initiatives and changes); (iv) self-efficacy and self-esteem (a belief in one's own ability to reach the desired outcome). While the last two factors can be included among criteria for selection, the first two belong to organizational design and managerial style.

Can it be said that the emotions of individuals interfere with motivation, and influence individual and collective actions and a company's performance, for example, through an organizational breakdown which may occur if emotions are not de-emotionalised in time?

Traditionally emotions have been separated from cognitive and rational thinking, and action has usually been attributed a passive role, in the sense that the behaviour of actors is presumed to be determined by the rules and routines of organizations. In other words, organizational behaviour takes place within structural constraints, taken as exogenous.

However, not even the modern subjective, constructive approach to organizational theory (Weick, 1969; March, 1994) is able to fully explain the role that the "emotional arenas" play in organizational decisions and in the company's performance. Fineman (1993, p. 14) challenges the organizational and firm theorists provocatively arguing that «we are left with an image of an actor who thinks a lot, plans, plots, and struggles to look the right part at the right time. But we do not hear this actor's anger, pain, embarrassment disaffection or passion and how such feelings relates to actions».

The modern approach of "emotional intelligence" (Goleman, 1995), according to which the latter is such when it is capable of monitoring and dominating the individual's own feelings and those of others so as to guide thinking and action, reverses the si-

tuation and recognises an active role to the members of the organization. In fact, it postulates that “emotional rational” behaviours can be implemented also to pursue strategic or political reasons in organization, to attract attention or influence decisions or relationships. It therefore follows that rationality, both in organizations and individual behaviour, is achievable if interfering emotions can be controlled or positively played for a specific goal. If this is true, there would be no risk of an organizational breakdown since emotions can always be de-emotionalised. However, this is not always the case, or it is an unlikely situation. In Goleman’s view emotional intelligence is not an innate personal characteristic, but — when deemed necessary — it is achievable at the price of long and specific training programmes.

But is emotion an unpredictable “subjective factor”, which can be treated as an “outlier” factor? For Bergknapp, organizational theories suffer from a blind spot, in that even the best-known approach, such as Giddens’ structuration theory, fails to acknowledge the role emotions play in the process of reproducing the organization. The theory of structuration (Giddens, 1984) argues that action and structure are inextricably linked, and that action «constitutes and is constituted by» structure. In other words, actions — even when they are replicated — can alter existing structural problems, via the recursive relationship which is established between action and structure. From this perspective human action always instantiates structures⁵. But Bergknapp counter-argues that emotions are not recognised as playing any role in the interactions theorised: «structuration theory does not make any claims about the particular contribution of emotions». Bergknapp’s paper gives a contribution in this direction, showing in a convincing and illuminating way how emotions (anger, in his example) enter

⁵ One can see that this kind of argument is not dissimilar to what Bogdanov (see Tagliagambe in this collection) has developed about the link existing between the complexity of social and natural phenomena (and problems) and organization (defined as organized complexity). In fact he notes that humanity is constituted as a collective entity (as an ensemble of people and means, that is, as an organization), united in the effort to solve problems. In making this effort, the organizational entity reshapes itself, assuming the connotation of an organizing complexity.

into the recursive relationship between action and structure. That is to say, organizational structures are created by emotions and they also produce emotions.

With reference to the evolutionary theory (Nelson and Winter, 1982), according to which routines can be seen not only as problem-solving skills, but also as “truces” (or compromises) among potentially conflicting interests (that is, as a mechanism of governance) (Coriat and Dosi, 1998), one could argue that organizational routine already subsumes individual and collective feelings (and emotions) within itself. The duality of the problem can be seen in the recursive relationship between emotions as one of the underlying factors on one side, and routine as an outcome, on the other side. From this interplay, the latter “could” come out modified, when emotions cannot be de-emotionalised or cannot be brought back within the routine in progress. But in the evolutionary theory the process of change is much more complex, and it is presumed to be governed by routines of a higher order.

2.3 *Trust, Institutional Complementarities and Economic Analysis*

With regard to motivation, ethic and values in organization, we join Caselli and Urban in asking if the assumption of the universal pursuit of self-interest is the only motive (value and ethic behaviour) that can be legitimately presumed in serious economic analysis. For example, reciprocal trust is absent from formal analysis in economics, probably because of the prevailing idea that trust (but also norms, values, *etc.*) does not arise logically from the fundamental premise of the *homo economicus* paradigm of economic research. But if one follows the Basili, Duranti and Franzini paper one can argue that economists know much more than they reveal, in their mainstream formal writings, about the possibility to develop economic analysis in accordance with a reciprocity-based approach.

The fundamental conditions, although still marked by self-interested behaviour, are based on a utility function which also contains a factor of self-esteem among its arguments. However,

the presence of the propensity to reciprocity is a necessary condition in the function, but not sufficient to ensure that trust is activated. They show and logically prove that trust is partially endogenous to an economic system, induced and made explicit by the role played by the institutions in determining the conditions of the exchange (e.g. transaction costs), and therefore in ensuring that trust emerges as an effective way of regulating transactions. The main conclusion is that an economic system and its workings are based in part on people's trust. And this is obtained without resorting to the traditional assumption of repeated games and to the connected accumulation of reputation capital, but rather by assuming that the individual has an inclination towards reciprocal behaviour.

Based on the same premises, we believe that it can be proved that trust is not only efficient if 'exchanged' between principal and agent, but also when this occurs between workers, in a co-operative team and in work groups. This implies that work performance is influenced not only by the properties of incentive mechanisms but also by the reciprocity that guides human behaviour. Hence, the dynamics of teams and work groups can be explained on the basis of the complementary nature of workers' trust, that is the belief that a worker has about other people's behaviour.

If it is so, the role of managers in creating and pursuing a reputation capital through a reciprocal style of management, able to induce and to make trust emerge from employees and trade union representatives, is important. This is because it reduces the cost relative to trust with regard to other negotiation or contractual means, and consequently influences the firm's performance (see *infra*).

2.4 The Myth of Technology as deus ex machina. Complementarities as a New Driver of Firm Performance

For a long time technology and its underlying knowledge were considered the driving force behind economic growth and company productivity. So much so that, according to Piore and Sabel (1984), some predicted that an "unmanned factory" would be

built one day. During the eighties this thesis received significant support and validation, due to the so-called general purpose nature of ICT (Bresnahan *et Al.*, 1995), as identified by three main characteristics (transverseness, technological complementarity and dynamism) responsible for the fundamental transformation of the economy from capital-intensive industrial to computer-intensive, information-based.

The concept of technology as a way of solving problems is in harmony with the modern logical line of thinking, and above all with (or perhaps it could be said that it stems from) Leibniz's dream — summed up by Tagliagambe in his concise but effective contribution to this collection. According to theory, for any given class of problems, it is always possible to arrive at a solution through a finite succession of instructions (that is, an algorithm), whose execution leaves no margin of doubt or ambiguity, nor does it involve memory, intuition, intelligence or creativity, since everything has already been perfectly anticipated. With the growth of complexity, the number of variables in play obviously grows too, and this determines an increase in the time and resources needed to find the appropriate algorithm for the solution of the problem (or problems), to which the development of computer science has, however, contributed greatly. Nevertheless, this conceptualisation of technology presents three significant limits, which are not without consequences: the first is that it assumes the existence in the real world of perfect and symmetrical information; the second is that it ignores the problem of uncertainty of a "substantial" and "procedural" nature (see also Grandori, *infra*); the third is connected to the link between complexity and organization, already anticipated by the Russian thinker Bogdanov (and picked up on by Tagliagambe)⁶.

In the last twenty years a huge amount of literature has been devoted to the role of investments in ICT, e.g. computer capital, as key elements of strong business performance, up until the time Solow pointed out, with specific reference to the USA, that the new technologies adopted had not translated into substantial

⁶ See also footnote no. 5.

productivity gains (hence, the so-called “Solow Paradox” of productivity). Increasingly, the traditional indicators used to measure productivity dynamics (total factor productivity, for example) have been considered inadequate (OECD, 1998) and therefore soft, or intangible factors, have to be integrated with traditional hard factors. Gordon (2000) estimates that large part of the increase in productivity (in the US economy during the second half of the nineties) is of a cyclical nature, and that the contribution of new technologies to total factor productivity of the economy is almost nil, as it is concentrated within the computer sector⁷. Similar conclusions are drawn from the study on ICT and productivity by the McKinsey Global Institute (2001), according to which the surge on ICT spending after 1995 was not the main reason for the surge in productivity growth: companies that invested heavily in ICT often achieved no better performance than those that failed to invest. Baily (2002, p.186) maintains that certain sophisticated ICT investments — such as Enterprise Resource Planning (ERP) software — have a severe limit, and are «...like pouring wet cement into a business’s operations. The cement hardens and destroys flexibility and innovation».

One of the main reasons why technology has failed to give a single and satisfactory explanation of the phenomenon of growth and productivity lies in the (false) claim by its apologists who believe that technology — on an equal footing and together with scientific management — would necessarily bring about predetermined solutions, regardless of both the substantial uncertainty and complexity which developed around the productive fact and the economic sectors (new products, reduction of the life-cycle of a product, increase in the content of service in the distribution phase of the product, global markets, *etc.*) and of the organizational design, the work practices and the operational knowledge in which the technology is inserted and used.

According to Cainarca e Zollo (2001, p. 108), it is precisely

⁷ GORDON (2000, p. 72) states that «...the New Economy has meant little to the 88% of the economy outside of durable manufacturing; in that part of the economy, trend growth in multifactor productivity has actually decelerated, despite a massive investment boom in computers and related equipment».

the experience of the uncertainty of the action — and of the consequent discretion of who performs it — which has revealed the ineffectiveness of technological absolutism and scientific management. This is because, when faced with uncertainty, human activity is mainly cognitive and communicative, almost negligently characterised by body movements (a central aspect of the Taylorist analysis of work), but evident in the changes of his interpretations of the facts of the world around him.

According to Orlikowski (2000, p. 250), however, it is the “absolutist” vision of technology itself which is responsible for the absence of the expected results. He argues that technology does not have a single, absolute meaning, but rather a relative one, connected to the organizational knowledge in which it is inserted and to the recurrent practices it fuels. He proposes two interpretative categories, one which refers to technology as *artifact* (material and symbolic proprieties, e.g. hardware, software, techniques) and another which refers to technology as *use* (what people actually do with the technology artifact in their recurrent situated practices). The use of technology is in fact shaped by the users’ experience with other technologies and their participation in a range of social work practices, to the extent that workers ignore certain properties of artifact or they invent new ones that may go beyond or even contradict designers, giving substance to the concept of ‘technologies-in-practice’ coined by Orlikowski, in contrast to ‘technologies-as-artifact’.

Cainarca, Massa and Testa test Orlokowski’s conceptualisations through the study of three business cases in which a data warehouse is used (DW). This is traditionally considered one of the most powerful tools for solving the problem of easy access to information, for effective decision making processes. The authors provide evidence on how the same tool is used differently, and for different goals, due mainly to social expectations with regard to technology and to different impacts of the latter on the organization-in-use (work practices, social values, *etc.*). The results confirm the validity of the constructivistic approach, according to which «knowledge [but also technology] is, at any time, what the practice has made it» (Orlikowski, 2002, p. 250).

Another interpretation of the lack of growth in productivity (and relative performance), in spite of substantial investment in ICT, relates to Milgrom and Roberts's (1995) thesis on complementarity among several aspects (or parts) of an economic organization, for example both between technology and organizational design on one side, and/or between job design and work practices on the other. According to this thesis doing (more of) any activity increases the returns to doing (more of) the others (Milgrom and Roberts, 1995, p. 181). This also means that the pay-off of a given behaviour or activity depends on a wide set of other actions inside and outside the organization.

Askenazy and Gianella (2000), for France and Cristini *et Al.* (2003*a*; 2003*b*) for Italy show that re-organization and computerisation, if combined, have a positive and significant impact on multi-factor productivity growth whereas, if separately introduced, both have a negative impact on multi-factor productivity growth.

There is also a substantial literature (Leoni *et Al.*, 2004) that gives credit to the idea of complementarities among workplace practices. According to this view the adoption of a number of practices rather than of a single one provides a net increase in terms of a firm's productivity, due to significant externalities (Cristini *et Al.* 2003*a*; 2003*b*).

The theory of complementarities has been extended to the relationship between work organization and innovations. Organizational models of process-based work contribute to improving the firm's performance both through greater product innovation and a more efficient use of R&D expenses (Greenan and Guellec, 1998; Michie and Sheehan, 1999, 2003) as well as by directly reducing faults and increasing quality via employee involvement, team-working, decentralisation of cognitive and operational tasks to lower levels of the occupational structure.

Mazzanti, Pini and Tortia, in this collection, search for new complementarities, specifically among industrial relations, organizational innovations and firm performance. They argue that decisional decentralisations require an equilibrium with industrial relations, in term of information, consultation and bargaining

over the re-design of responsibilities, quality of work and compensation between managers and worker representatives. They find that good economic performances are strictly associated with the intensity of organizational change, while the set of industrial relations variables used in regression analysis does not emerge as a significant explanatory element for a firm's performance. However, positive industrial relations, in terms of "good quality atmosphere" and "involvement of worker representatives and employees" enter as key variables in explaining organizational changes, confirming that they are an important factor in a dynamic and evolving competitive context and that they have an indirect effect.

The theory of complementarity is nowadays at the centre of great attention in the economic theory of firms (Linbeck and Snower, 2003). Specific attention is devoted to "performing" aspects such as job, workplace and human resource management (the so-called new work practices), product innovation and competences formation. The amalgam is constituted by the organizational knowledge and its dynamic dimension, that is to say organizational learning, which leads to dynamic organizational capabilities, a set of specific and identifiable processes.

According to arguments developed by Cristini, Gaj, Labory and Leoni in this collection, high performance workplace (HPW), defined in terms of de-layering, team working, job rotations within and across teams, and participation in problem-solving groups and the existence of multiple incentives to boost motivation, such as performance-related pay and participation in decision making and job design, is at the core of these complementarities. The reasons are that on one side HPW leads employees to acquire new and better skills, in other words new organizational forms "develop" new competences, and consequently a higher performance, while on the other hand they stimulate product innovation. The latter comes about by encouraging problem-solving, continuous improvements from shop floor employees, production, discovery and utilisation of local knowledge, i.e. activities that March (1991) would call 'exploration'. Exploration is learning through discovery or experimentation, which leads to the fulfilment of new goals and un-

tapped opportunities, in other words, new knowledge, which fuels innovation in the form of new products, new services or new organizational routines.

The virtuous circles which establish themselves in the various entities (that is, new workplace practices, new product innovation, new competences), due to their path-dependent nature and reciprocal interactions, tend to take the form of a spiral, inscribed (or locked) into trajectories that may well be superior or inferior, according to the “selection” and the “intensity” of organizational specificities (Coriat and Dosi, 1998, p. 106)⁸.

In this perspective organizational capabilities are the result of a co-evolving system of “cumulative changes”, and the notion of complementarity assumes a temporal or dynamic connotation. The value of each change is, to a great extent, associated with the initial conditions, that is with the “stage setting” properties.

2.5 Toward the Redefinition and Relaunching of the Measurement of Effectiveness

The goal setting theory (Locke, 1968) postulates that specific goals lead to higher performance levels than general goals, and that difficult goals — associated to the management by objectives technique — are positively and linearly related to performance (Drucker, 1954). These assumptions have constituted the reference point of management processes for a long time. But the selectivity of targets, which responds to a logic of efficiency, leaves open the question of effectiveness. This has a crucial value for the success of an organization, and it is generally referred to a complex set of operations, which requires practical measurers that are not easy to get ready.

⁸ Paraphrasing the words of Tagliagambe, with reference to the conceptualizations made by Bodganov, organization does not limit itself to a ‘taking into account’ of the complexity to be managed and the problems to be solved, but ‘is organized’ — by means of a project — with regard to them and in function of the objectives which are established.

Based on several important changes, referred to at different times, that have affected human reality and, therefore also the context of organizations, Usai, Cabras and Giudici think that a revision and a re-proposition of the theory for the measurement of effectiveness, referred both to organizations and their human beings, including management, is essential.

One of the most important reasons for this ambitious intention is related to the fact that, nowadays, the requirements of attention to organizational performance and, in more general terms, to the relation between expectations placed on organizations' actions and their outputs is very strong. Such expectations come both from inside and outside organizations.

With reference to that special organizational category of companies quoted on the stock exchange, the development of the discussion about the stakeholders theory, the activation of "control" structures and, more widely, the growing pressure by a public opinion ready to stress and debate the way these organizations are or are becoming, call for a continuous and systematic obligation to immediately ascertain possible deviations between expectations and accomplishments and, consequently, to commence the needed corrections.

Moreover, the latest act of Italian legislation about the external "control" of public administration units, including the institution of new structures, such as the technical evaluation groups, can also be seen as a sign of increased sensitivity towards the pursuit of effectiveness. Likewise, the persistent and repeated demands for action, clarity and assessment of the outputs which arise from the investments made by organizations using public resources, at an international, european, national and local level, are having the same effect.

In this situation, effectiveness is not only a paradigm of organizational rationality, as it was before, but has become an imperative which qualifies the action. Thus the measurement of effectiveness becomes a management function, like planning, employee organization and management, as well as control.

The authors' contribution also tackles the modern and complicated problem of measuring the effectiveness of intangible as-

sets, which have become very important determinants of a firm's performance (see *infra*) and a firm's market value⁹.

These problems are very important because they are at the centre of a process of development and change of the economy based on strong and growing immateriality contents in the inputs and outputs of firms and other organizations. The problem of the measurement of effectiveness is not only about quantitative aspects, but also about qualitative ones, and it is so important that it has rightly been considered as a success (or failure) matrix for organizations. This is because the aim is not only to verify the accomplishment of expectations but, rather, to create a dynamic organization able to originate dynamic effectiveness.

2.6 *Final Comments*

These are some of the areas and themes which, we believe, are at the heart of the lively and fascinating debate that currently concerns both organization as a science and as a problem of design (to use Grandori's words), as well as the firm as a dynamic behavioural entity. What appears to emerge from the picture is the idea that a new paradigm is taking hold at both a conceptual and factual level. This new paradigm focuses on an entity which is evolving, which is re-positioning itself organizationally, according to market prospects (clients, suppliers, *etc.*) and knowledge. It is an entity which is "sensitive" to, and modelled by, motivations, emotions, ethic values and norms, whose actors are ready for reciprocal behaviour, exchanging trust, only when encouraged by the context and by institutions, and thus contributing to generating tremendous resource savings in transaction costs. It is an entity whose distinct and salient traits — relative to organizational structures and styles of management — are changing. The entity is transformed from a business understood as technologically predefined to one in which the re-engineering of pro-

⁹ According to HALL R.E. (2001), intangible capital would be responsible for most of the changes in market values of firms in the Dow Jones index.

cesses and the “empowerment” of human resources lead to the diffusion and accumulation of knowledge, competence and intangible assets. Lastly, it is a complex entity, made up of many forms of ‘complementariness’, and, therefore, only with a multi-disciplinary approach can we truly appreciate its contents, its various interactions and feedback and its *distinctive* ways of doing things.

We hope that these papers will provide food for thought for our readers. It is our small contribution to the enormous effort, which the scientific community is making to improve our understanding of the field.

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