Beyond *Prediction*-Based Management Science

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Abstract
Management Science (MS) is a science concerned with the problem of the effective guiding of human systems. As a matter of fact, the word *management* comes from the Italian *maneggiare* meaning to *guide* something with the hand (Latin *manus*). Setting goals and making decisions in human systems to guide them to achieve these goals in the most effective and efficient way is a core activity of MS. Now, in order to fulfill this "guiding" task MS has to predict human behavior, i.e., it has to anticipate how people within and without a given organization will react to a particular policy, strategy or decision. In order to predict behavior MS has emulated science which has shown to be a powerful approach to the prediction and guidance (control) of natural and man-made systems. In so doing, MS has gained the reputation in the Western world of possessing real effective ("scientific") knowledge to guide human systems.

In this paper we want to argue that this reputation is ill-founded since it is based on a fiction, namely, that the behavior of human systems can be predicted or even *anticipated* (i.e., *weak anticipation* as defined by Dubois (2000))! Consequently, if this criticism is well grounded, at least two possibilities are opened to MS. One is to dismantle its whole fictitious project and "close the shop". Another possibility for MS is to rethink itself in the light of this criticism and orient its efforts towards a new whole endeavor. In this regard, a new conception of management is suggested, one that pays heed to the *mystery* of reality (i.e. reality is inherently unknowable) and the *finitude* of man and, accordingly, becomes concerned with the continuous, changing, unpredictable character of social reality.

Keywords: prediction, control, phenomenological ontology, learning

1 Introduction

The worst thing that could happen to a science is to wake up one morning and find out that its whole enterprise seems to be based on a fiction. In the case of Management Science (MS) this picture would be even more confirmatory if we decided an auscultation and found a number of developments which seem to be pointing to a totally new interpretation of its role. In this paper we want to explore this hypothesis.

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Since prediction —or *weak-anticipation* (Dubois, 2000)— is a core concept of MS, we believe the present paper might have some implications for other disciplines dealing with weak anticipatory systems in general.

Based on Churchman (1968), MacIntyre (1985), Nodoushani (1999) and others, in the first part of this article we will draw a positivist picture of Management Science which portraits it as a predictive science. We are not claiming this picture to be the "true" picture of MS. Like it happens with any human activity, and MS is no exemption, there are different and contrasting ways of interpreting human action. Nevertheless, our picture is a plausible one, and reflects a very common way of understanding MS as a science based upon the goal-seeking model of human behavior (Checkland, 1988). Accordingly, the business of MS is depicted as one of designing the means (e.g. instruments, strategies, plans, forecastings) to ensure that a given human system can reach its goals effectively and efficiently[1]. Based on this goal-seeking picture of MS, in the second part of our paper we will proceed to question MS's foundations, and show its impossibility of being a predictive science.

Given MS's wide spread applications in different and important fields of human activity (e.g. from the exploration of the outer space to the running of economies and states all over the world, Churchman, 1968), the consequences of our critique are far more reaching. It is not just that a wide-spread tool of industry, government and capital in general, such as MS has become, is based on a fiction. It is also that the whole project of modern societies —and its beloved ideas of autonomy and freedom— is a "fictitious" one.

Now, our critique to this project could be only internal, that is, we could just accept the whole project and the role MS plays in it and proceed to question merely its internal coherence or the means being used to carry it out. However, we want to question the project itself, and the conditions which "sustains" it, in order to draw a convincing interpretation of the role of MS in the present. Such external critique, however, is a difficult one due to the fact that we are immersed in MS's conception of the world —the very same conception we want to criticize.

Therefore, in the third part of this article we will sketch some elements of an ontology which is contrasting to that underlying the project's, namely, *mechanicism*. From this platform our critique will be launched. Fortunately, we will not have to start from scratch, for such a task has been already undertaken in various fields (see for instance Fuenmayor, 1991a,b), including the field of MS. In this connection, we will gain inspiration from the work of management scientists such as Spinosa, Flores and Dreyfus (1997), Kofman and Senge (1993), Flood (1999), and others, to draw an alternative, phenomenological ontology for MS. In the light of the work of these scientists we *may interpret* MS as going through a paradigm shift —from an instrumental, anthropocentric, individualistic paradigm which currently dominates humankind into a new conception of humanity (based on the inherently unpredictable

[1] A more sophisticated version of MS depicts it less machine-like oriented and more concerned with the study and guidance of *purposeful systems* in different environments. Human systems exhibit purposeful behavior. This means that humans set their goals and proceed to pursue them (and hence exhibit goal-seeking behavior) but also are able to change their own purposes (Ackoff & Emery, 1972).

nature of social reality). In sum, this paper will explore the boundaries of a new way of understanding MS as a non prediction-based science.

2 Management Science: A *Scientific* Enterprise

According to MacIntyre (1985), this all-pervading character of our time called the "manager" has its antecedent in the "civil servant", an invention of nineteenth-century Europe. With the emergence of modern European states and their complex administrative problems, the civil servant arises as the answer to the claim of social reformers of the time that "governments need to learn to be scientific if their problems are ever to be solved". Accordingly, more and more civil servants were required to have the kind of education that will make of them real (scientific) administrators. Thus, "[g]overnment itself becomes a hierarchy of bureaucratic managers, and the major justification advanced for the intervention of government in society is the contention that government has resources of competence which most citizens do not possess." (ibid. p.85). In this way the "manager" as a scientific administrator, and management education as a formal activity arose in nineteenth-century Europe. Soon the industrial complex adopted a similar stance: their managers also had to be "scientific". Hence, the "manager" is a character that emerges in the European cultures of the nineteen-century in the midst of industrialization and the rise of the modern state. To understand better such phenomenon we are forced to ask: what made it possible?

What made it possible was a paradigm change in the eighteen-century which in turn made both the powerful rise of science possible and its becoming the dominant way of interpreting reality. A basic idea in the new *mechanistic* paradigm (the previous one was centered on the idea of God, the master of the universe, and tradition as the fundamental source of knowledge and patterns of behavior) was that just as the mysteries of nature were unveiled by the new science of mechanics —and thanks to it we were able to predict the movements of the planets with very precise and deterministic laws— it was thought that similar objective methods and conceptions could be transplanted to the social realm. Accordingly, like the nineteen-century engineers were the people called to make practical applications of the discoveries of the physical sciences, so it was thought that a type of "social" engineer could be trained to do a similar job in the social world. Thus, managers, based on scientific knowledge, could design effective and efficient governments or human organizations in general, just like engineers did design effective and efficient machines.

Driving the mechanistic conception of the world was a will to power, i.e. a desire to control and change the world, a desire of man to get free from the strings of nature and become the master of the earth (Arendt, 1958). And science was the tool which could make such a god-like dream come true.

Now, this "liberating" project has been the main and unquestioned driver of Western civilization in the last two centuries. However, in the last fifty years or so the disenchantment with this project seems to be growing, particularly within a number of distinguished academics from political science, philosophy (MacIntyre, 1985; Taylor, 1989; Foucault, 1973) and also MS itself.

One facet of the malaise felt by these academics is precisely related to the deceitful role social science in general, and MS in particular, have played.

3 Management Science: A Fiction?

The core idea of a science of social systems management is that it can help to predict human systems behavior using the laws discovered by social science. Thus, for instance, when a management scientist is called in by General Motors to give advice to the company, there is a strong belief on the part of the chairman and other high level company directors, that this expert has knowledge of organizational behavior, or can derive knowledge of it from established social systems' laws. However, as MacIntyre (1985) has convincingly argued, the salient fact about the social sciences is the absence of the discovery of any law-like generalizations and, as a result, the impossibility of predicting social behavior. And there are at least four reasons for it.

One source of unpredictability has to do with the social phenomenon of innovation. If one could predict innovation in a given society, one Could reduce a major source of uncertainty. However, the idea of predicting innovation is logically incoherent[2]: "Any invention, any discovery, which consists essentially in the elaboration of a radically new concept cannot be *predicted*, for a necessary part of the prediction is the elaboration of the very concept whose discovery or invention was to take place only in the future." (ibid. p.93, emphasis added).

The second reason has to do with the unpredictability of the behavior of human agents and in particular the unpredictability of my future by me. It is a trivial truth, MacIntyre says, that when I have not made up my mind about what course of action to take in a given situation, I cannot predict which course I will take. Nevertheless, I could have the illusion that even if I cannot predict my own behavior I could predict that of others. Suppose this were true. However, inasmuch as the behavior of others depend on my own behavior (e.g. like in a chess game), and since mine is not predictable then the system formed by they and I is not predictable.

The third reason has to do with the game theoretic character of social life. In most games one plays in such a way as to hide information from the other players. One way of doing this is by making the opponent wrongly believe that one's strategy is this or that, when in fact is a completely different one. Furthermore, in many social situations is often the case that several "games" are being played: "Not one game is being played, but several, and, if the game metaphor may be stretched further, the problem about real life is that moving one's knight to QB3 may always be replied to with a lob across the net." (ibid. p.98). And, we will add, when one thinks that one has finally figured out what game is the opponent playing, then, surprise surprise, the opponent changes the rules or the game altogether!

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[2] Besides the following argument, other arguments can be given, related for instance to Gödel's theorem and the impossibility of deciding in any formal (mathematical) system about whether certain propositions are or are not valid in that system. This mathematical impossibility makes impossible to design a rigorous procedure to predict for instance the future of mathematics or physics. Yet much of our future depends on the future of these two sciences.

The fourth and last reason is pure contingency (the Goddess *Fortuna*!): behaviors and things nobody could have ever dreamed of just happen, against all possible odds! Hence, the basis upon which the expert manager (in government and private corporations) sells his/her profession are a mere fiction: "The concept of managerial effectiveness is after all one more contemporary *moral fiction* and perhaps the most important of them all...I do not of course mean that the activities of purported experts do not have effects and that we do not suffer from those effects and suffer gravely.[3] But the notion of social control embodied in the notion of expertise is indeed a masquerade. *Our social order is in a very literal sense out of our, and indeed anyone's, control.*" (ibid. p.107, emphasis added).

Hence, rational plans and projects are always fragile, and consequently so are the changes based on them. And so are indeed the basis for the management expert to claim special knowledge and power to direct social change in particular, or the grand project of modernity in general.

But again, the question arises: how, then, has such domination by MS been possible? We have said it has to do with a paradigmatic shift, but this answer is in some way only shifting back the question to the paradigm plane: what makes possible paradigm changes? We will address this question briefly in the next section[4]. Here we would like to present another aspect of the mechanistic paradigm which sheds further light on the nature of the modern project of Western civilization and its blind faith on science.

The mechanistic paradigm that began to take hold of European culture in the seventeen-century, assumed a separation of man from nature and its cultural environment (e.g. his tradition), a separation required to make possible an attitude of control and domination of nature. In fact, underlying this paradigm there was a *disengaged* subject ontology: there is a self and there is a world and they are two different entities. Through reason and the senses the self can get to know the world of objects "out there" (separate from him), objects that man can use for his own benefit and hence to control them. As Spinosa et. al. (1997) point out: "Galileo turned thinking away from trying to attain a wisdom that would deepen and enrich a person's connections with the cosmos. Instead he promoted a *desituated* understanding of people and things by attempting to explain all physical phenomena in terms of fundamental laws." (p.5). This Galilean conception of the world, that is characterized by *detachment*, was brought into prominence by Descartes and reached its final form "...when we privilege the instrumental view that comes when we look at things with foreign eyes...[then] we can detach ourselves from the things [and people] we encounter and begin noting only the features of the things [and people] that most clearly serve the *instrumental* purpose at hand." (pp.5-6, italics added).

However, for us, human beings of current times, immersed in this worldview, is very difficult to understand the real implications of this instrumental worldview, unless

[3] Witness for instance the effects on the lives of millions of people around the world of the decisions made by so called "experts" in the International Monetary Fund or the World Bank (López-Garay, 2000).
[4] A more thorough treatment of this question can be found in Fuenmayor (1997)

we have a contrasting perspective. Fortunately, recent developments in MS (Echeverría, 1997; Flores, 1996, 1997; Spinosa, et. al. 1997) are beginning to sketch the elements of a contrasting phenomenological ontology, based on Heidegger (1927), which can help reveal the underlying assumptions of the Cartesian dualistic ontology (mentioned before), and in particular bring forth the assumptions sustaining the idea of man as a *disengaged subject*.[5]

4 A Phenomenological Conception of Reality

A phenomenological examination of our everyday coping with the world shows that one flows with it forming a unity. The reflective, disengaged attitude (where one steps back from the world) is rather an abnormal situation in which the unity of experience is distinguished into a subject of experience and an object of experience, the inner world of the subject and the outer world. Now, because this distinction "...between an inner and an outer is constructive and continually gives occasion for further constructions [i.e. further distinctions], we shall in the future no longer speak of a subject, of a subjective sphere, but shall understand the being to whom intentional comportments belong as *Dasein*... Self and world are not two entities, like subject and object...but self and world are the basic determination of Dasein itself in the unity of the structure of being-in-the-world." (Heidegger quoted by Dreyfus, 1997, p.2). This gathering of self and world in Dasein occurs in a *clearing*. Furthermore, "[o]nly this clearing grants and guarantees to human beings a passage to those entities that we ourselves are not, and access to the being that we ourselves are." (ibid., p.3). Hence, it is in such a clearing or *background* which things and people are meaningful to us. Let us notice, before continuing unfolding this ontology, that the important claim here is not that it is "the real true one". What is significant about it is that it helps to undermine our belief that the mechanistic reductionistic paradigm is the only and real true way of understanding reality.

According to this phenomenological ontology, the aforementioned clearing or *background* is not something we can produce at will by some act of choice. And yet, it is the ground of whatever makes presence, including thought and action. Hence we are deeply compromised with the *world* (i.e. whatever makes presence) in ways which we cannot determine at will. Moreover, such background has an indirect and mysterious way of showing itself as *presence*, a way which changes through history. In effect, on the one hand, the background must remain hidden (this is due to its condition of being the ground of things, i.e., like in a figure-background relationship the background is not perceived and yet it is a crucial condition for the figure to show itself as such). On the other hand it must make presence in some way through the upholding of the figure which it sustains. In cultural and historical terms the background make partial presence through the particular spirit (*Geist*) or basic order with which a particular culture in a particular epoch is impressed. Thus, in the Middle Ages the order of things was orchestrated around the symbol of God. In the Enlightenment it was Reason.

[5] From here on I will use the word "man" to mean human being, unless specified otherwise.

The historical nature of the background, plus the impossibility of controlling it or fully disclosing it (Fuenmayor, 1997; López-Garay, and Suárez, 1999), makes our thought and our actions to be both constituted historically and not fully predictable!

At this point, our reader, may justly ask: If I accept your arguments, what becomes of human freedom?! If we can never grasp the background of our actions, where is our autonomy? If you deny the possibility of social science to predict, then what are we human beings —mere puppets of unknown forces?

Understandably, our reader must have difficulties to accept our arguments because we live in an epoch in which we take great pride in freedom, i.e. the liberty to make of our lives whatever we wish. Armed with our science and technology we feel there is no frontier man could not conquer: the outer space, or the inner world of the human genome, just name it. We are closer than ever to become masters of the universe and of man itself. In effect, one day, not very far, genetic engineering will be able of designing human beings "á la carte". This means we will be able not only of designing the physical features of human beings, but also their behavior. Then we will have no obstacle to predict the entire conduct of human beings, simply because we will have managed to program genetically their behavior. In so doing, we will finally dehumanize ourselves by transforming man into a designed biological machine! Paradoxically, then, humankind's freedom understood within a mechanistic paradigm could lead man to "derealize" himself, creating a very in-human world.

Again, our reader may retort: "even if I accept all of your argument you must reckon your worldview offers no better future for mankind, unless you think that being a puppet of unknown forces is a desirable thing." At first sight this seems to be case but we will show below this is not right. The idea of freedom which the phenomenological ontology embraces is remarkably distinct. However, in order to understand the possibility of this new conception of freedom it would be interesting to notice that freedom was not always understood as liberty to do anything one wants. Such human invention is of a very recent date.

For instance, in the nineteenth-century freedom was understood as an achievement of reason. The aim of the enlightened thinkers was to establish the empire of reason on earth. Kant, the most articulate thinker of the time, had the idea of a moral community governed by reason, an ideal of humanity that required each human being to regulate his/her conduct, not by impulse or selfish interest but by rational self-legislation: the norm that guide one's action must be such that it can be elevated to the stand of universal law —it must be valid for all rational agents without exemption. The Kantian moral imperative was the seed to think and create an entirely new social order which was not dependent on tradition, culture, religion or prejudice of any kind. Notice the enlightened conception of freedom embodied in this seed has nothing of individualism or selfishness. On the contrary, it guides one's actions not by personal interests but universal laws which reason dictates: it is the community of rational agents what must be primordial in our moral thinking (hence the demand of universality of the norm that guide our actions). The importance of the other and humanity as a whole is better displayed in the following reformulation, by Kant, of his moral imperative: Act in such a way that you treat *humanity*, whether in your own person or in the person of another,

always at the same time as an end and never simply as a means." (Kant, 1981, p.429, emphasis added). Here we have an entire rational foundation to build a new social order where freedom has substantially nothing to do with predicting and controlling social change or doing whatever I wish with my life. Now, let us see another way of understanding human freedom different from the Kantian or the current prevalent one.

5 Human Freedom Beyond the Paradigm of Prediction and Control

One way of understanding freedom which could be in harmony with the alternative phenomenological ontology sketched in the previous section is the following. Freedom means to become aware of our finitude —and thus to escape from the illusion that man has complete autonomy. Even the present human condition in which we perceive ourselves as masters of the world is rooted in a *background* which is not of our own making and which we cannot control. Openness and receptivity to this background is the condition of possibility to our freedom. Understanding how we have been shaped and constrained by the *background*, is what freedom is about. Metaphorically speaking, it is as if we were trapped and to free ourselves from the trap we had to know, first of all, its shape. However, the question arises: how can we know the shape of the trap if we have been constituted by it and hence we cannot "see it"?[6] The answer is that the trap itself has the key for such a possibility but we must *listen carefully to its call* (since we cannot see it). In some ways this is the role of a thinker in a community, i.e. *listening* to the key call of the present, being *attuned* to the background. To put it differently, by being receptive to current practices in his/her community —both marginal and central practices— the thinker articulates them in discourses and meta-narratives which resonate in the community as a whole. They resonate because the community hears in them echoes of the shape of the trap that constitute that very same community. This knowledge, then, is freeing, but not completely because our historical background — the shape of the trap— can never be totally displayed (López-Garay and Suárez, 1999). In this lies our finitude!

There is, however, another face of freedom in the phenomenological ontology which has to do with disclosing new and creative ways of understanding our being and dealing with the flow of life. In Foucault's terms freedom means to produce one's life as a work of art (Dreyfus, 1997, p.15). Now, in order to become a true craftsman of one's own life one has to make oneself answer and respond to the vital themes of our time, those themes "slumbering" in the present, i.e. one has to become attuned to the very present that sustains us all. Heidegger's cabinetmaker metaphor illustrates further this point. A cabinetmaker's apprentice is not merely learning to use some tools to make cabinets, nor is he just gathering knowledge about the customary ways of working the wood to make cabinets and the like. "If he is to become a true cabinetmaker, he makes himself answer and respond above all to the different kinds of wood and to the shapes *slumbering within wood* —to wood as it enters into man's dwelling with all the

[6] Actually the situation is far more complex. It is not only that we are trapped and to be free we need to know the shape of the trap. The point is that the trapped is not something separate from the trap. The essence of the trapped is *trapness*.

hidden riches of its nature." (Heidegger, 1968, p.14). And this should be true of the most important of all crafts, namely, the making of one's own life as a work of art.

One, then, has to understand the *background* not as a "limitation" but as a potential source of new "shapes". Artists have always worked within so called "limitations" of a tradition handed down to them (Dreyfus, p.15) and yet they can create new works of art.

Such attunement to the present has to pay attention to *marginal* practices —i.e. those practices which are overlooked by common sense because they are not well integrated to more common practices, or are felt as negative because they are in tension with them (Spinosa, et.al.,1997, pp.22-23). Why are marginal practices important? Because the tension and contrast between these two types of practices make us notice the real nature of common practices, those practices one takes for granted and which are the source of the "common" ways of dealing with things in life. The marginal practice is thus a pointer to possibly new ways of dealing with the flow of life: "...a new beginning, then, requires not genius, but openness and receptivity to the *marginal practices*...The new beginning is a founding leap... which by way of its grounding in the *marginal practices from the past* bestows a new clearing." (Dreyfus, 1997, p.6, emphasis added).

The possibility of a new beginning, then, has to be cultivated by being opened to our "heritage" or history, i.e., *to how have we come to perceive and act the way we do it in the present.* Notice we are not talking about a causal link between this openness and a new beginning. This is not something man can control. A new beginning is granted to man not created at will by him. Yet, he can cultivate the active wait for such a bestowing[7]. We know this much but we cannot know why it is so. This is the *mystery* of reality. And to know its unknowability is all we can ask of us, finite human beings.

In sum, a "good" listener is opened not only to how we have been constituted historically but also —and because of it— to the possibility of a new beginning. These are two faces of freedom in the phenomenological ontology.

Now, in the light of the previous conceptual framework, what new role can we envisage for MS?

6 Beyond a Prediction-Based Management Science: The Usher of a new era?

Several management scientists are beginning to converge to the conclusion that social reality is inherently unknowable and that, as a result, there is a need to rethink MS in contemporary life (Flood, 1999). One possibility is to consider that MS has played its historical role as the spear-head and main tool of the instrumental paradigm which dominates our time, and that now other stronger forces must take over the lead in this task (possibly Internet? See Spinosa et.al. 1997, p.11-15). Although according to our initial picture of MS this may be the case, however, there is a different way of

[7] May be this is what artists call the inspiration from the Muses. In this connection it is worth to mention that the Muses are the daughters of Mnemosyne (Memory), and hence the active wait might have something to do with recuperating our memory. This comment will become more relevant in our paper when we talk about recovering our sense of wholeness as a response to our present fragmentation.

interpreting our present and with the meaning of MS. The lead for this interpretation is in the work of management scientists such as Churchman (1971,1979), Checkland (1981, 1990, 1998), Flood (1999), Flores (1996, 1997), Grundstein (1981), Jackson (1995), Senge (1990), Spinosa, Flores & Dreyfus (1997), among others. In the last thirty years they have been pointing to a basic shift in the guiding ideas of MS, a paradigm shift to be more precise.

There are various themes which define this shift and determine a possibly new role for MS. One of them is *learning*. In this regard, Checkland, Senge, and other management scientists, have centered their work on the idea that management is about learning processes not prediction and control of human systems. The goal-seeking model of management science, Ckeckland (1988, p.381) says, has led MS to a myriad of subtle and difficult questions which can have no answer within its instrumental conception of human action and social reality. Therefore, he advocates a paradigm change which starts by redefining the notion of management. For Checkland: "To 'manage' anything in everyday life is to try to cope with a flux of interacting events and ideas which unrolls through time. The 'manager' tries to 'improve' situations which are *seen* as problematical... and the job is never done because as the situation evolves new aspects calling for attention emerge, and yesterday's 'solutions' may now be *seen* as today's 'problems'." (Checkland and Scholes, 1990, p.1, italics added). The use of inverted comas in this citation is meant to call the attention of the reader to the subjective meaning of these terms. Human beings [scientists included] attribute meaning, says Checkland & Scholes, to what they observe and experience. This is something essential to their nature. Therefore, there is not an 'objective' world out there waiting for the scientist to come and describe its 'true' nature. Furthermore, human beings act according to the meanings they attribute to their situations. This is the basic way humans 'manage' their lives, in the family or in the firm, in governments or universities. Action brings with it new situations and possibly new ways of experiencing them. The new situation may be felt as an improvement with respect to the previous one (before action was undertaken) or as a deterioration of it. New meanings are attributed to the situation and, accordingly, new actions undertaken. We can describe this cycle as a *learning cycle* when intentional *improvement* of the situation is sought by the agents. Whether a situation is improved or not is something which only the agents involved in the situation can say (according to the meanings they attribute to it). Management science should then be more concerned with *learning* and the social construction of reality than with goal-seeking processes (ibid., pp.3-4). In fact, the ontology underlying Checkland's conception of MS is based on the idea that social reality is "constructed", i.e., it is the outcome of human beings carrying out a process of continue negotiations and renegotiations of their perceptions and interpretations of the world outside them. MS, then, is about *the systemic management of these processes of reality construction* which seek the improvement of human situations.

Another author dealing with the theme of learning in MS is Senge (1990). He has popularized the idea of *learning organizations*. Senge's theory of learning organizations is an example of what one might call a transitional theory, that is, a theory which is in the middle of a paradigm shift in MS. As a result, it contains elements of

both the old paradigm and the new one which is beginning to emerge. The following summary of Senge's theory will be focused on those elements which point to a new conception of management[8].

Kofman and Senge (1993) argue that there is a need for a basic shift in the guiding ideas of MS —from problem solving to problem dissolving: "We argue that the main dysfunctions in our institutions —*fragmentation*, *competition*, and *reactiveness*— are actually byproducts of our success over thousands of years in conquering the physical world and in developing our scientific, industrial culture...[O]ur first response 'to overcome these problems' is part of the very mindset that generated them....[hence, these] are not problems to be solved —they are frozen patterns of thought to be dissolved. The solvent we propose is a new way of thinking, feeling and being: *a culture of systems*." (p.2, emphasis added).

One way of starting to build this new culture is by developing learning organizations, which then become the seed for the cultural transformation at the entire social level. What these organizations have to *learn/practice* is nothing less than a new conception of the world —the *systems view*. Learning to be systemic implies developing new capabilities such as to "...*recover 'the memory of the whole'*, the awareness that wholes actually precede parts; [realize that] [c]*ompetition* becomes cooperation when we discover the 'community nature of the self' [i.e. its systemic or holistic character] ... [and] *[r]eactiveness* becomes creating when we see the 'generative power of language', how language brings forth distinctions from the undivided flow of life" (ibid. p.2, emphasis added).

Let us notice in this quote, and the following one also taken from Kofman and Senge, some echoes of the phenomenological ontology: "...the self is not a thing, but, as Jarome Bruner says, 'a point of view that unifies the flow of experience into a coherent narrative' a narrative striving to connect with other narratives...We normally think that the individual has a primordial origin and that selfhood is given to each one independent of the cultural or group practices in which that person happens to grow up." (ibid. p.10). This idea of the *disengaged self* is a fiction of the same kind as that of a social world governed by laws that we can discover and use for prediction and control. Both are the outcome of our mechanistic, reductionistic (hence antisystemic) conception of the world. The problem is that when we forget or ignore the cultural constitution of our being, we begin to identify our egos with ourselves and see our community and others as secondary and detached. This leads to social *fragmentation*, *competition* and *reactiveness*, the three major ailments of contemporary society that Senge's systemic theory wants to "dissolved" by means of learning organizations. Why organizations?

Organizations are the microcosms of the larger society, and hence laboratories where the development of a systems culture may be practiced. In addition, organizations, due to their major influence in Western societies, can catalyze similar processes in the larger communities which contains them. Hence, Senge's theory is

[8] For a different interpretation of Senge's work see Suárez (1998).

aiming at a larger and more crucial target, a *cultural revolution* triggered by means of learning organizations. In this context, MS's role becomes that of helping to trigger a large scale learning process, and in so doing becoming the usher of a new culture —a culture of systems.

A second theme defining a new role for MS is that of the *mystery* of reality, the fact that it is inherently unknowable. Flood (1999), like the previous authors referred to above, also points out that in MS we are witnessing a paradigm shift —from a causal-mechanistic paradigm to a systems paradigm. To cope with the latter we need developing what he calls "astute practice". Some guiding principles for this sort of management practice derive from the conclusion that social reality is inherently unknowable. If we accept this, "...then the way we think about and approach society and organizations will change. We will operate in conscious recognition of the following three paradoxes.

-We will not struggle to manage over things —we will manage within the unmanageable.

-We will not battle to organize totality —we will organize within the unorganizable.

-We will not simply know things —but we will know of the unknowable." (p.255).

In some ways, Checkland's and Senge's work, each in its own terms, represent an attempt at handling Flood's paradoxes, and in so doing to provide elements to shape a new role for MS. For example, Senge's *mysterious* conception of reality and its management coincides with that of Flood's: "We invent structures and distinctions to organize the otherwise *unmanageable flow of life*...The best constructs for explaining and organizing the world will imitate life itself. They will be in a continual state of becoming. When we fail to recognize this principle...[w]e loose the child within us who lives in awe and who understands what Einstein meant when he said that the most beautiful experience in the world is '*the experience of the mysterious*'. (Kofman and Senge, 1993, pp.11-12). In other words, we will not simply know things but experience the unknowable (the mysterious). And with regard to the second paradox, Senge might respond organizing, within the unmanageable, through the *learning organization*.

We now come to our third and final theme in relation to a possibly new role for MS. We can call it *whole-recovering* to condense in this label some critiques of management scientists, such as Senge, which explicitly talk about the need to *recover our sense of wholeness* or unity —in the face of the increasing fragmentation of our thinking and our being, a condition brought about by the triumph of the mechanistic, reductionistic paradigm[9]. Such a recovery implies a cultural revolution as Kofman and Senge pointed out, a deep transformation able to change the view that human beings are atoms, isolated from each other, moved only by selfish forces in an mechanical universe. Against a disengaged mechanical subject Kofman and Senge oppose a holistic

[9] See Taylor (1991) for a penetrating analysis of the consequences for humankind brought about by the triumph of the mechanistic paradigm. See also Weaver's (1948) diagnosis of the origins of fragmentation and the sickness of our culture. His cure lies in the renewed acceptance of our holistic nature and that of reality.

conception. Recalling a previous quote they made from Jarome Bruner, every human being is "...a point of view that unifies the flow of experience into a coherent narrative —a narrative striving to connect with other narratives and become richer [more whole!]."

Put differently, our last theme is about recovering our sense of a *we*, it is about gathering our fragments into a whole again. What do we mean by becoming *whole* again, and what does it have to do with MS?

In terms of our phenomenological paradigm, to become whole again means two interrelated points. First, it means to become aware of the *background* which constitute us. This is equivalent to become aware of that whole which we form with our culture, our history and our language. These, however, are not things one possess, nor are they mere scientific constructs. We are essentially constituted by them! We are not "users" of cultural practices but we *are* the practices of a culture; we do not speak the language of a culture but *are* spoken by it; we do not posses a history but *are* history itself —or rather we *are* the historical narrative of a culture! In terms of Jarome Bruner's previous quote, we *are* a meta-narrative, woven and interwoven by the individual narratives which each of us *is* —and vice versa[10].

How do we become aware of the constitutive role of our *background* and in so doing we gain a sense of wholeness (a sense of a *we*)? There is a *local* and a *macro* plane to this question. At the local level one has to bring forth the local practices and customary ways of being which constitute us within one's community by attending to its *marginal* practices[11]. At the macro level we try to recover our sense of wholeness by constructing a metanarrative of our culture within which we can see how its current concerns and practices have, as a whole, come to be. Proceeding this way "...helps us see that in the history of the West things, people, and selves appeared in significantly different ways in different epochs. Hence the notion that there is any one right ordering of concerns and modes of understanding is bracketed...Concerns today appear in a national culture that emerged from conditions that led people to experience life quite differently from the way we now experience things and people." (Spinosa et.al. 1997, pp.159-160).

In the light of this cultural and historical disclosing of our wholeness, what do we mean by becoming *one* with the unmanageable flow of life? This is the second point previously mentioned, a point interrelated to the first. Becoming *one* means to have a stand to deal with the forthcoming, in a disclosive not a predictive way. Again, recalling material from our phenomenological ontology in section 4., a new beginning requires openness and receptivity to the marginal practices. We have to listen to what is forthcoming, and in this sense new, from the stand articulated through the metanarrative. In its light we have to think again our institutions, our problems, our "future". In short, we have to think again how to manage our life within its unmanageable flow. Nevertheless, we are only beginning to understand what all this means and what are the real challenges open to MS. We will now conclude our paper

[10] This idea is ample developed by MacIntyre (1985, ch.15).

[11] The role of *marginal* practices was already explained above.

sketching briefly one approach to these challenges. In the following we ask the reader to bear in mind the material summarized in this section.

7 Conclusion: The Educational Challenge Posed to Management Science[12]

In this paper MS has been challenged to change its role from being the spear-head of mechanicism in all orders of life to becoming the usher of a paradigm shift.

This new role is based on the realization that we are finite beings, constituted by a *background* which is mysterious and not of our own determination. To cope with this new reality, we need to develop new "management skills". For instance, we need "skills" to recover our sense of wholeness, and to listening to the "hidden voices" of the present.

Now, for MS to serve as the forerunner of this new way of understanding reality it should develop those skills itself. In fact, this is one way of one being the usher of something, by portraying with one's own behavior the very skills and ideas one is called to announce.

There are two specific and "natural" targets where MS can portrait such behavior. One is human organizations. What MS can develop in this area, its traditional ground of action, is being illustrated (among others) by the work of management scientists such as Senge and his concept of "learning organizations". A second target is MS education. The idea is to trigger a process of change within the academic world of MS itself. The place to carry out this task is the universities, the places where future managers, consultants and management researchers are formed.

Management Schools are currently dominated by a positivist/realist methodology which contributes greatly to the processes of neo-liberal rationalization and fragmentation typical of our time (Foldy et. al. 2000; Nodoushani, 1999). Such schools are developing the opposite skills to those needed to cope with the aforementioned paradigm shift. But, if MS were to undertake the new role we are proposing, this situation would have to change.

To begin with, MS would have to recover its sense of wholeness. This means MS would have to situate itself holistically, regarding itself as part of a historical process which has made possible the emergence of mechanistic thinking in the West and of MS as the spear-head of such thinking. The form of this recognition would be a narrative which can help future managers see that in the history of the West, there have been different ways of ordering our reality, different ways of seeing nature, things and ourselves. Therefore, the idea that our current way of ordering reality —with its conception of man as disengaged subject, whose freedom is made synonymous to possessing the ability to predict and control nature and man himself— is the only and right one, is dispelled. What we are today is merely the outcome of those successive

[12] Other authors, such as Suárez (1998), would not consider that a new paradigm is emerging in MS. Rather, they will argue that the same bibliographical material I have used in this paper to make my argument, could be interpreted differently, as another manifestation of instrumental thinking, albeit a more sophisticated one.

paradigmatic shifts. Consequently, understanding today's conception of reality requires attending to how our current concerns have been historically transformed.

In the light of this narrative, MS curricula would have to be redesigned. For instance, current "skills" and theories to deal with organizational phenomena should be historically taught, that is to say, they should be taught in the light of the historical narrative mentioned above. Thus, one would be able to understand the historical role they have played, helping themselves to constitute our present. At the same time, educational experiences should be designed to learn to deal with organizational phenomena in a holistic way. This means, on the one hand, to develop an understanding of organizations as historical phenomena which have arose as part of a particular way of understanding reality proper of modern times. On the other hand, since MS can play an educative role within organizations, management schools should teach skills to help people in organizational settings to recover their and their organizations' holistic sense. In this regard the work of Spinosa et.al. (1997) is worth mentioning as an example of current management scientists pioneering new skills people in organizations (and citizens at large) will have to develop in order to cope with the emerging new conception of reality.

We should not ignore, however, the difficulties such curriculum change may have to face. Foldy et.al. (2000) give us a glimpse of what these difficulties might be in relation to their effort to implement a curriculum of critical management studies (CMS) in business schools. Management schools are still a strong hold of positivism, they say, impeding any change which threatens their mechanistic worldview and its associate managerialist education. The CMS community is advocating a struggle to "...actually bend the bars of the iron cage of managerialist education....We believe that to bend the bars of the neo-liberal/technocratic iron cage, one must begin to imagine a community of critical management scholars with distinct ideas about what constitutes "legitimate" research, teaching and community service within a university setting and with it a different relationship to business government and society." (ibid. p.3).

The present paper may be considered a small contribution to MS in general and management education in particular about a deeper understanding of the "epochal iron bar" within which humanity as a whole is currently trapped.

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