ON THE METAPHYSICS OF MANAGEMENT

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ABSTRACT

The question about the metaphysics of management is considered especially from the point of view of the subject, acts and object of management. Management is understood holistically, in connection to production, rather than as an independent domain in itself. In terms of metaphysics, the time-honoured question about the superiority of thing (substance, matter) ontology or process ontology is addressed. The determination of metaphysical commitments is discussed.

Empirical evidence on the appropriateness of alternative metaphysical assumptions in management is forwarded. It is concluded that Western management thinking has been dominated by thing metaphysics. This has led to deficient conceptualizations and counterproductive methods, present in the 20th century. There have been process metaphysics based correctives, which include Japanese-originated methods and out-of-the box methods developed by Western parties. These correctives have often outperformed their substance based counterparts, but their adoption in the West has been slow.

It is concluded that the Western metaphysical assumptions, especially when implicit, hinder learning, understanding and implementation of the process based correctives in the realm of management. However, even if the dominant Western metaphysics constrains our thinking, it might be possible to break out of it, through appropriate ontology training.

KEY WORDS

Metaphysics, management, production management, organization, change, process, substance.

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INTRODUCTION

This paper extends and augments the arguments presented in a prior paper (Koskela & Kagioglou 2005) by the authors, which addressed the metaphysics of production. Here, the focus is on the metaphysics of management[3], especially in the context of productive activities. In addition, new insights into the roots of the conventional metaphysical stand are presented.

The central starting point in this paper is that Western thinking in general has been dominated by substance[4] metaphysics. This has arguably influenced the mainstream managerial methods, as used in the 20th century. There have been alternatives, including Japanese-originated methods, such as the Toyota Production System, as well as out-of-the box methods developed by Western parties. These alternatives have often outperformed their conventional counterparts, but their adoption in the West has been slow. Whether these alternatives are based on an alternative metaphysical stand, especially on process metaphysics[5], is the key issue addressed.

The structure of the paper is as follows. First, the question of how metaphysical assumptions are determined is considered. Then, subjects, acts, and objects of management are considered regarding their metaphysical assumptions. To conclude, the findings are summarized, and their implications are discussed.

HOW ARE METAPHYSICAL ASSUMPTIONS DETERMINED?

Earlier, the influence of the dominant scientific worldview in determining the metaphysical assumptions concerning production was considered (Koskela & Kagioglou 2005). However, the scientific worldview is not the only determinant of metaphysical assumptions. Especially, everyday thinking seems to be influenced rather by culture and language.

The earliest widely known explanation to this is the so called Sapir-Whorf hypothesis, which contends that natural languages influence the way we think. Whorf (1956) describes linguistic relativity, the mediating influence of language on metaphysical assumptions, as follows:

> We dissect nature along lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face; on the contrary, the world is presented in a kaleidoscopic flux of impressions which has to be organized by our minds—and this means largely by the linguistic systems in our minds. We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way — an agreement that holds throughout our speech community and is codified in the patterns of our language.

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[3] The notion of management in this paper is traditional and resonates with Fayol's (1949) views. For him, management was not a domain abstracted away from other activities in an organization (as the presently dominant view holds), but a function related to the facilitation of productive activities.

[4] Here, substance-based, matter-based and thing-based are used as synonyms when referring to metaphysics. One more possible synonym is object-based, but due to the wide and unrelated use of this term in software engineering, we hesitate to use it here.

[5] For a discussion of these two metaphysical strands, see, for example (Rescher 2006).

In fact, one stimulus to Whorf´s ideas was the observation that the Hopi language considered time in a different way to English or other major European languages[6], such as German and French (Anon. 2006). In English, there is a tendency to analyse reality as objects in space: the present and future are thought of as a "places", and time is a path linking them. Especially, Whorf (1956) says of Western metaphysics:

> The metaphysics underlying our own language, thinking, and modern culture […] imposes upon the universe two grand cosmic forms, space and time; static three-dimensional infinite space, and kinetic one-dimensional uniformly and perpetually flowing time - two utterly separate and unconnected aspects of reality (according to this familiar way of thinking).

In contrary, according to Whorf, the Hopi language imposes upon the universe two other cosmic forms, namely *manifested* and *manifesting* (or *unmanifest*). The manifested comprises the physical, historical universe, the past and present. The manifesting (process of manifestation) comprises the future, but also all mental, not only in relation to man, but also to animals, plants and even things. Whorf interestingly approximates the manifesting domain to hope[7] or hoping. The Hopi language, along with many other native American languages, is thus oriented towards process.

Over the years, the evidence base in regard to the Sapir-Whorf hypothesis has grown, even if somewhat slowly, and become more nuanced (Lucy 1997). However, the issue is still unresolved and controversial.

Another, wider explanation has recently been suggested by Nisbett (2003), who marshals a wide array of evidence for the difference between East Asian[8] and Western thinking, the former being "holistical", the latter on "analytical". Thus, according to Nisbett:

- In mentally organizing the world, the Westerners prefer categories and the Easterners relationships

- The Westerners have tacit assumptions about stability, where Easterners see change.

- Regarding patterns of attention and perception, Westerners are attending to objects, whereas Easterners are attending more to environments and are thus more likely to detect relationships among events

It is easy to see that "analytical" thinking is subscribing to the thing ontology, and "holistical" to the process ontology.

Nisbett explains these differences through, at base, differences in ecology in Greece (from where Western thinking radiated) and China, leading to differences in economy, social structure,

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[6]   However, not all European languages share the thing based metaphysics. It has been contended that Finnish (and possibly other languages of the Fenno-Ugrian family, like Estonian and Hungarian) are oriented towards Gestalts. There is some evidence that this influences the cognition and thinking of a Finnish speaking person.

[7]   Interestingly, the management of hope has recently evolved as a managerial approach (Juuti 2005). Of course, the occurrence of the same word, hope, does not imply that the underlying concept would be the same, but in this case, the suggested approach of management of hope is indeed a future-oriented and processual approach, and thus not too far way from the Hopian concept of hope.

[8]   By East-Asian, Nisbett refers especially to China or cultures having been influenced by it, such as Japan.

attention, metaphysics, epistemology and finally, in cognitive processes. This is not a contradictory account to Whorf's scheme, but complementary, as culture is thought to influence language as well as thinking[9].

METAPHYSICS OF MANAGEMENT

How is management based on metaphysics? As for other fields, metaphysical choices or commitments provide the foundational orientation grid, through which the managerial world is conceived. In the following, we analyze, from different angles, the conventional mode of management (in the West) and later correctives from a metaphysical point of view. In most cases, we forward logical or empirical evidence showing that the correctives rectify shortcomings caused by the metaphysical stand of the conventional mode of management. However, in some cases, we just show that the both metaphysical choices are represented among the managerial schemes.

SUBJECTS OF MANAGEMENT

The classical view of management holds that it should be centralized (Fayol 1949): there is a managerial unit and a group of executors which carry out the managerial orders. This resonates, and possibly reflects the mind-body distinction advocated by Descartes, at the outset of Enlightenment. At the background, one can easily see the influence of thing metaphysics: management consists of well defined acts, especially command and control, carried out by a clear-cut single unit.

Another view on management holds that it is a ubiquitous process where the majority, if not all persons in an organization are involved in (for example in visual management, Greif 1991). In this view, the subject of management is vague, fluid and in a constant flux. This is the process metaphysics based understanding of management.

ACTS AND MEANS OF MANAGEMENT

In the classical idea of management, still prevalent for example in project management (Koskela & Howell 2002), takes that management consists of planning, execution and controlling, with emphasis on planning (hence the term management-as-planning). Thus, the primary task of management is to create a plan, representation of future action. Execution, from a managerial viewpoint, consists of commanding, at due time, the executors to start their part of the plan. For control, there are two basic schemes. In the first, control is related to observing any deviation from the plan, and to returning back to plan. The thermostat control, where the flow of hot liquid is regulated for maintaining a preset temperature target, provides here a model. In the second, the question is about contracting control, where just the output of a task or contract is controlled in due time. However, in both schemes of control, the focus is on the outcomes of the productive process (rather than the process itself).

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[9]   Recent research on a Brazilian tribe, the Pirahã, has provided evidence for such an extended explanation as well as for the Sapir-Whorf hypothesis itself (Davies 2006). The Pirahã language has neither numbers nor a past tense. The Pirahãs have insurmountable difficulties in using numbers when learning Portuguese. They do not have accounts of the origin of the world.

It can be noted, that in all cases the managerial action is anchored to a *thing* or *substance* (or at least to something that can be seen as a thing or substance): Plan, command, (plan and realized activities as) liquid, outcome. This is a thing-based understanding of management. It is also noteworthy that as things can be described only at certain time points, this type of management tends to be intermittent, jumping from one time instance to another.

However, the classical ideas of management have been increasingly criticized, both on empirical and theoretical grounds, and correctives have been introduced. In the following, such criticism and correctives are considered.

Simultaneous management

Laufer (1997) tells a story on how he, after completing a Ph.D. in construction project management, tried to implement new planning and control tools in practice. He says: "I […] was disappointed to discover that most of my newly acquired planning tools were not useful." He then embarked on a study on how competent and successful project managers manage, and synthesized, from the successful practices found, the concept of simultaneous management. He describes it as follows (Laufer 1997):

> Simultaneous managers do subscribe to the old mind-set of rational, scientific management an engage their teams in systematic planning. At the same time they also adopt a new mind-set and spend a great deal of their time scanning and influencing the project's external environment, and when necessary, they intervene and act swiftly. They develop formal as well as informal communication and procedures. They start planning very early, but at the same time they also postpone planning. They create a flexible plan by deliberately and carefully combining selected redundancies with an otherwise efficient plan. They do not expect goals and means to be resolved sequentially and separately but rather simultaneously and interactively.

It is easy to conclude that the new mind-set[10], introduced by Laufer, is about coping with uncertain, dynamic, emergent situations, compatible with process metaphysics[11]. Especially, the new mind-set is geared towards continuous management (instead of discrete managerial acts) and simultaneous attendance to different issues (instead of separate, sequential procedures).

Means and results based management

The idea of focusing control, and indeed, the thrust of managerial attention, to outcomes has been criticized under various banners.

Deming (1982) says: "…management by numerical goal is an attempt to manage without knowledge of what to do, and in fact is usually management by fear." He pinpoints the practice of seeing management as a generic activity, with managers switching from a company to another or an industry to another as one culprit for this: "It is easier for an incoming manager to short-circuit his need for learning and his responsibilities, and instead to focus on the

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[10]   Furthermore, Laufer contends that simultaneous managers do not choose "either-or", but "one and the other at the same time". Thus both the old and the new mind-set are simultaneously maintained. This connects Laufer's thinking to the Eastern way of seeing the two sides of any apparent contradiction existing in an active harmony (Nisbett 2003).

[11]   Indeed, Laufer alludes to this himself by referring to the well-known process philosopher Bergson.

far-end, to manage the outcome….Focus on outcome is not an effective way to improve a process or an activity."

Schonberger (1996) calls productivity, which is a primary performance measure in the classical managerial model, a second-order result, whereas the managerial focus should be on first-order results, such as defect rate.

Johnson and Bröms (2000) advance the idea that results-based management generically leads to counterproductive results, through the neglect of the longer time horizon. They also interestingly discuss the phenomenon of manipulating the production system for artificial improvement of performance measures (pp. 52-53):

> …language also allows us to treat the abstract concept of a business result as if it were an actual object that existed separately from the messy, organizational context that gives rise to it. Viewed as an independent entity, this abstraction, the quantitative business results that we entertain only in our minds, seems to be more real and concrete than does the real world situation from which it emanated in the first place. It is not a great leap, then, from seeing abstract results as concrete realities to trying to manage them by arbitrarily manipulating the relationships from which they emanate.

Indeed, the previous quote from Johnson and Bröms can be interpreted as an apt description of thing metaphysics in – damaging - action. As a substitute of results based management, they forward means based management, which more or less equates to the Toyota Production System (TPS). They claim that means based management is based on the basic principles that govern the operation of all living systems. It hardly needs to be added that living systems resonate with process metaphysics (Rescher 2006).

Budgeting and beyond budgeting

Even if budgeting can be considered as one case of results based management, it is such a pervasive practice that it merits a separate treatment, based on (Hope and Fraser 2003). Although the principles of budgeting can be dated back to the 1920's, it was started only in the 1960's to be used as a fixed performance contract. Hope and Fraser pinpoint, among other issues, the following problems of budgeting:

- Rigid plans focus people on compliance.

- Preset allocation of resources encourages hoarding.

- Centralized decision-making ignores market feedback.

- Fixed targets lead to only incremental improvement.

Instead of budgeting, Hope and Fraser recommend "Relative performance contract", with alternative goals and measures, both financial and non-financial. Also, performance may be measured regarding how well it compares to that of peers or against world-class benchmarks. The new model has the following merits, according to Hope and Fraser:

- Continuous planning focuses people on value creation.

- On-demand allocation of resources minimizes costs.

- Decision-making by local units in touch with one another makes full use of market feedback.

- Relative targets push employees to outdo themselves.

Hope and Fraser (2003) cogently describe the shift from budgeting to alternative models: "Corporate planning ceases to be a series of breathless sprints and instead becomes an endless conversation." This can be directly interpreted as a call to a shift from jumping between time instances (as suggested by thing-metaphysics based management) to continuous management (based on process metaphysics).

Theoretical correctives

The managerial schemes based on thing metaphysics have been criticized, for example in (Koskela & Howell 2002b). There are alternative theories of management. Regarding planning, the approach of management-as-organizing introduces the idea of human activity as inherently situated (Johnston & Brennan 1996). Thus, planning should also focus on structuring the environment to contribute to purposeful acting towards plan realization. Concerning managerial execution, in the language/action perspective, described by Winograd and Flores (1986), action is triggered by explicit commitments (promises) resulting from two-way communication, instead of the mere one-way communication (orders). The scientific experimentation model of control of Shewhart (Shewhart & Deming 1939) focuses on finding causes of deviations and acting on those causes, instead of only changing the performance level for achieving a predetermined goal in case of a deviation or of just ensuring that the output corresponds to the plan and specifications. The scientific experimentation model adds thus the aspect of learning to control.

These three managerial modes, management-as-organizing, language-action perspective and scientific experimentation, all are metaphysically based on the idea of process. They have been practically implemented (at least partially), for example, in the Last Planner System of production control (Koskela & Howell 2002a) and in agile project management.

Agile project management

Recently, the agile methodologies in software engineering projects have rapidly diffused, and they are being generalized into general project management guidelines. Let us consider Scrum, a well known agile methodology, based on (Koskela & Howell 2002a).

In agile projects, it is not usually possible to prepare an accurate work breakdown structure, due to uncertainties related to requirements and technology. Rather, performance baselines (called forecasts) in terms of costs and time are estimated directly based on the functionalities required. However, the conditions of project work have been standardized, and certain planning takes place in this framework. Two work cycles have been defined. One, with duration of one month, is called Sprint. The other has duration of one day. From a theoretical point of view, the question is clearly about management-as-organizing. Management is addressing the structuring of the setting of action, in terms of predetermined work cycles and associated, routinized meetings. There is no central representation of action.

In the daily Scrum meetings, standardized regarding their agenda, time and place, each person in the project team tells what he intends to do next (obviously based on negotiations with the rest of the team). In case of impediments, he announces them in the following day's meeting. Thus, a two-way discussion, as prescribed by the language/action perspective, is carried out (even if all aspects are not explicit or well-developed).

There are three levels of control: daily, Sprint and whole project. Each team member reports on impediments to progress in daily Scrum meetings. There is control after each Sprint period:

The team presents its achievements to the management and the client and the progress is compared to planned achievements. After each Sprint, the Product Backlog (remaining functionalities to be realized) is revised, as well as the performance baseline for the whole project. Theoretically interpreted, the uppermost level of control is based on the thermostat model, whereas the two lower levels are based on the scientific experimentation model. These two lower levels are geared towards learning and knowledge-creation, whereas the uppermost level takes care of the time-cost issues of the whole project.

All in all, Scrum is thus firmly based on process metaphysics.

Strategy

In his book "The rise and fall of strategic planning", Mintzberg (1994b) attacks the (at least then) prevalent "Planning School" of strategy. He contends that there are three grand fallacies to this approach.

First, the assumption of predetermination means that "because the context for strategy making is stable, or at least predictable, the process itself as well as its consequence (strategies) can be predetermined". Mintzberg forwards evidence for the contrary claim that long-range forecasting is difficult if not impossible.

Second, the assumption of detachment implies "that thought must be detached from action, strategy from operations, ostensible thinking from real doers, and therefore, strategists of their strategies." Here, Mintzberg reminds that while thinking must precede action, it must also follow action. He aptly says (Mintzberg 2004a): "The notion that strategy is something that should happen way up there, far removed from the details of running an organization on a daily basis, is one of the great fallacies of conventional strategic management."

Third, the assumption of formalization implies "that the strategy making process can be programmed by the use of systems". The counterargument is that because analysis is not synthesis[12], strategic planning is not strategy formation.

Mintzberg forwards an alternative view, where strategy formation may be emergent. Without going into details, again it can be claimed that the mainstream "Planning School" of strategy subscribes to thing metaphysics and Mintzberg's alternative view on process metaphysics.

OBJECTS OF MANAGEMENT

Finally, management has objects, self-evidently at least production of useful artefacts and services, but also secondary objects, such as organization that enables production or change that improves production.

Production

As argued in (Koskela & Kagioglou 2005), the conventional, and thing-based view on production holds that the question is about transformation. The transformation model overcomes

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[12]   The underlying notion of analysis as a rational procedure and synthesis as a creative procedure is currently widely accepted. However, this is not compatible with the original understanding of these terms, according to which analysis represents the creative solution stage, whereas synthesis provides a proof for the solution (Koskela & Kagioglou 2006).

the difficulty of representing change by jumping over it, from one instance of time, represented by one set of things (input), to another instance of time, represented by another set of things (output). Among the damaging assumptions related to this are the following: (1) tasks are considered as black boxes, (2) all tasks are considered similar by nature; (3) tasks are considered (nearly) mutually independent.

There are two other theories of production that subscribe, at least partially, to process metaphysics, namely the flow model[13] (production is a flow - in time and space - of material towards the output) and the value generation model (production is conversion of a - particular - customer's requirements into products which fulfil them. The gradual changeover from the transformation model to these other models is described in (Koskela 2000).

Organization

Creating and modifying organizations is, without doubt, a managerial task. Galbraith (1995) contends:

> I see the design of organizations as a design issue. The design of organizations is much like the design of other things – buildings, airplanes, computers.

In contrast, consider the view on organizations by Taylor and Van Every (2000):

> If organization is emergent in communication, as we believe, then it is not a being, but a becoming. What we ought to be studying is not organization or ideology, because neither has any ontological status independent of communication, but the processes of communication by which we continue to construct both to become the world we live in.

Obviously, it makes a major difference for our practical efforts to organize, whether we see an organization as a thing, i.e. a being, or something becoming. Interestingly, practical managerial approaches to organizing through communication have recently emerged (Howell & al. 2994, Sull & Spinosa 2005). In the framework of this paper, this issue unfortunately cannot be explored further.

Change

Recently, achieving change has risen to a major field of management. But what is change? Weick (2000) claims that the breathless rhetoric of planned transformational change, aiming at upheaval and discontinuity, presents a distorted view on how change actually works. He introduces the concept of emergent, continuous change to balance the picture.

Perhaps even more cogently, the well-known authority on continuous improvement, Imai, (1986) writes:

> It dawned to me that there might be different kinds of change: gradual and abrupt. While we can easily observe both gradual and abrupt changes in Japan, gradual change is not so obvious a part of the Western way of life. How are we to explain this difference?

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[13] Queueing theory, although generally falling into the domain of flow conceptualization, still subscribes to the idea of clear-cut jobs (i.e. things and recipes for their transformations) traversing through the production network. Thus it is partially based on thing metaphysics.

Imai speculates that the difference would be due to a different value system in Japan in comparison to the West, but does not elaborate further. As presented above, it is justified to think that the explanation is at a more profound level, in the differing metaphysical commitments[14]. For one subscribing to the substance metaphysics, change is the difference between two sets of things – abrupt. Instead, for a person inclined to process metaphysics, gradual change is easily conceived, perhaps even the normal case.

DISCUSSION

The analyses and interpretations presented pinpoint to just one direction: the metaphysical commitments have provided a major dividing line in management. The central conclusions of the analyses made are outlined in Table 1. Management based on thing metaphysics is characterized by a centralized, designated subject, carrying out intermittently managerial acts on the things and entities that exist in production, for getting the task done. In contrast, management based on process metaphysics allows for a ubiquitous subject, carrying out continuous acts of management on the productive processes or other, related processes. The objective is to maintain a fit between different aspects and parts of the situation.

Table 1: Management based on thing and process metaphysics

	Management based on thing metaphysics	*Management based on process metaphysics*
Subject of management	Centralized, designated individuals	Distributed, ubiquitous
Acts of management	Discontinuous, intermittent	Continuous
Objects of management	Things, entities and their abstractions	Productive processes, change, emergence
Objectives of management	Getting the task done	Maintaining a fit between different aspects and parts of the situation

The analyses made indicate a clear pattern: in the West, management based on the thing metaphysics has originally prevailed. However, the sole application of thing-based metaphysics seems to bring about two broad types of problems:

1. Conceptual loss: a processual phenomenon is not seen, not taken into account, not realized. The failure to recognize continuous improvement in the West is a prime example.

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[14]   Parkes (2005) contends that classical Japanese philosophy understands the basic reality as constant change or impermanence. According to him, the arts have in Japan traditionally reflected this impermanence. Of course, this is in line with Nisbett's (2003) thesis, presented above.

2.   Explanatory loss: a processual phenomenon is seen but miscategorised as a thing-based phenomenon, as its process features are not recognized, and consequently it is misunderstood[15] . The conceptualization of production as input-output-transformation (Koskela & Kagioglou 2005) is the example of choice for this.

These problems have stimulated a movement towards process-metaphysics based alternatives in management. It seems that process-based metaphysics is leaving the managerial battlefield as the winner, even if thing-based ontologies are surely needed in the framework of it.

CONCLUSIONS

It can be argued, based on the analyses made, that there is a consilience (jumping together) of evidence towards the crucial significance of metaphysical assumptions for management. Thus, it can be claimed that this metaphysical explanation of the developments in managerial sciences is deeper than those explanations focusing on theoretical change. This surely invites more conceptual and empirical research to be focused on this area. From the point of view of practice, the need for being explicit with metaphysical assumptions accentuates.

The findings suggest a revisit to the question of a cultural basis or explanation for the Toyota Production System, which, as Fujimoto (1999) has argued, leans towards an evolutionary approach and thus on process metaphysics. The general view has tended to be that the question is about generic methods, as justified by the success of Toyota transplant factories in the West, and the relative success of adopting related techniques outside of Japan. However, the consistent and recurrent difficulties of understanding the Toyota Production System in the West could be interpreted so, that the Western metaphysical assumptions, especially when implicit, hinder learning, understanding and implementation of the TPS, and in every case make its further development more difficult.

However, even if the dominant Western metaphysics constrains our thinking, it might be possible to break out of it, through appropriate ontology training. Ironically, it seems that progress in production management requires returning to the issues debated by some of the first philosophers of the Western civilization, namely Heraclites and Parmenides.

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15   In cognitive science, there is ample evidence for the claim that existing knowledge, based on matter metaphysics, prevents learning new information that is related to complex and dynamic schemes (Chi in press).

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