Management Tools:
From Complexity Reduction to Complexity Creation

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INTRODUCTION

Anticipate, decide and control are the three structuring pillars of everyday management activities (Moisdon, 1997). Regardless of the operating field or organization structure, the management tools deployed to support these activities are expected to display two key characteristics. First, they need to vehicle a formal rationality (Weber, 1978), i.e. the results or orientations privileged by the tool are to be interpreted as the reflect of objective and well-structured calculations. Second, they allow managers to circumvent their limited rationality by providing meaningful syntheses that encompass a set of parameters or dimensions which would not have been approachable through cognitive capabilities alone. With respect to these expectations, it seems fair to state that management tools are first and foremost perceived as reducers of organizational complexity.

It is therefore unsurprising that organizations confronted by unprecedented competition, rapidly-shifting environments, and strengthened governance structures rely more and more heavily on such tools in order to adapt to their context and demonstrate accountability to a variety of stakeholders (authorities, partners, shareholders, clients, and even the public at large).

However, such a vision does not sustain a serious reflexive approach on the way in which management tools are used on an everyday basis. Indeed, by shedding light on the appropriation of management tools and the associated strategies deployed by the users thereof, assorted literature on management tools sociology as well as organizational behavior have provided us with the prerequisite hindsight to criticize what now can be assumed as a naive vision of management. Consequently, the analysis of management tools' life cycle - from conception to effective deployment and potential obsolescence - reveals how they may be at the source of a chain of human and organizational reactions, which may lead to unintended consequences and the emergence of new behaviors. Simply said, we're speaking here of complexity.

This chapter will first introduce the reader to the literature that provided, through theoretical and empirical approaches, the seeds to grow a new vision of management tools that goes beyond their supposed rationalization impact. With this background in mind, the following section describes two mechanisms through which organizational complexity is directly linked to the introduction of a new management tool. In order to do so, two distinct real case studies focused on performance indicators (PIs) in the field of industrial safety are presented. Largely deployed as a means of organizational control, PIs have spread in organizations thanks to their supposed ability to provide synthesis that directly support action. Focusing on this kind of tools should therefore reveal mechanisms of interest to a large sample of managers and researchers.

Finally, future developments are suggested, especially regarding the ability of exploiting the description of complexity mechanisms in the management tool design phase so to prevent their occurrence.

Comparatively to existing literature, this work goes beyond the observation of empirical facts resulting from the introduction of management tools to describe the underlying mechanisms at play and

relating them to existing concepts already made available by management science. In doing so, this work contributes to:

- provide additional empirical evidence on the need in management science to pay higher attention to the way our tools are appropriated and modified by organizations and vice versa;
- a better formalization of complexity creation mechanisms due to the introduction of management tools;
- endow managers with elements of attention to be considered at various stages of management tools life cycle (diagnosis, design and implementation) to confine the potential chain of negative reactions out of which emerges organizational complexity;
- Remind that complexity creation is inherent to management tools deployment and remains a valuable source of organizational knowledge.

BACKGROUND

Management science has flourished at the intersection of various disciplines: mathematics, sociology, psychology, philosophy, etc. In parallel, the increased specialization and segmentation of organizations has resulted in management approaches being equally specialized and autonomous. Given this context, it is unsurprising to witness the cohabitation of a large range of management trends and schools of thought the epistemic grounds of which are yet to be homogenized (Pfeffer, 1993) (Van Maanen, 1995).

Management tools are good tracers of this background, as they bear with them clear representations of the variety and evolving scientific grounds on which they rest. This starts from the very definition of this concept. A positivist-oriented definition would consider management tools as satisfactory representations of reality (Dumez, 2008), on which managers may rely in order to anticipate and act on organizational dynamics. Resulting orientations are seen as the vehicles of an objective rationality that should impose itself on users whose roles are limited to (i) providing the required inputs for the tool to operate, and (ii) apply orientations or decisions resulting therefrom (Chiapello & Gilbert, 2019). In so doing, management tools are expected to act as organizational stabilizers thanks to the compliance and even standardization of its members' actions and decisions. A very widespread trend of thought and practices that heavily relies on this philosophy is Operations Research (Ackoff, 1979) and the cybernetic approaches of organizational control (Otley, 1983). This vision, combined with rapidly-increased computational capabilities, has shaped the representation of management tools as complexity reducers (Berry, 1983)

In practice, these hypotheses have been proven limited both in terms of philosophical structure and practical applications. A short account of the main criticism is provided in the following:

- Game theory (Von Neumann & Morgenstern, 1944) allowed economics to put on the map the option of inter-organizational cooperation to achieve better results than individual optimizations. The opportunity of constant rationalization and the seeking of local optimums therefore appears, at least in some circumstances, as under-achieving compared to the anticipation of other stakeholders' moves and the design of adapted cooperation strategies.
- Human relation theory (Damachi, 1978) has stressed the importance of interactions in shaping organizational performance. It revealed the extent to which motivation, leadership and commit-

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