What are management tools made of? The "listic" structure of managerial artifacts

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Abstract. The literature on management tools has shown that they are composed of three interacting elements: a managerial philosophy, simplified view of organizational relationships, and technical substrate (Hatchuel & Weil, 1992). This article focuses on the latter, which is rarely taken as a specific research object, and explores the "artifactual" dimension of management tools. Using the work of the anthropologist Jack Goody (1977) on the evolution of oral societies toward written societies, this article shows that some management artifacts are based on a "listic" structure, which leads to: (1) a description of the structuring dynamics of these management artifacts, which evolves between rationalization and contextualization according to an ordering principle of the list; (2) a distinction between open tools and closed tools, two genres that call for different modes of design and implementation; (3) a renewal of critical research around three typical phenomena of the list—"gap-spotting," "table-of-contentism," and "don juanism"; and (4) two lines of research on the appropriation and design of management artifacts.

Keywords: management tools, list, appropriation, design, critical management.

INTRODUCTION

This article is in line with the literature on management tools, understood as "a set of reasoning and knowledge that formally link a certain number of variables from an organization, such as quantities, prices, quality levels or any other parameters, that are intended to instruct the various classical acts of management and can be grouped under the terms of the classic trilogy: foreseeing, deciding, controlling" (Moisdon, 1997: 7). In this tradition, tools and instruments are described as representations of collective activity that convey a managerial philosophy (according to Hatchuel & Weil, 1992), a belief (Gilbert, 1998), a spirit (De Sanctis & Poole, 1994), a script (Akrich, 2006), a managerial "Logos" (Boussard, 2008), or a generic interpretative scheme (Lorino, 2002). These representations are coupled with a material or technical element: a technical substrate (Hatchuel & Weil, 1992), a technology (De Sanctis & Poole, 1994), a technical object (Akrich, 2006), or an artifact (Lorino, 2002). Despite the bases laid in this field by these authors, however, research on management tools tends to dissolve the instrument (Aggeri & Labatut, 2010): Even when situations of use are described in detail, the instrument itself is either considered to be one element among others or summarily described in the analysis. Considering that this aspect remains obscure and not yet explored, this article proposes to explore the "artifactual" dimension of management instruments. How does

the managerial philosophy fit into a technical substrate? How does the spirit emanate from technology? How is the generic interpretative scheme structured in the artifact?

Many current trends are addressing these issues, especially those that consider the importance of materiality in organizations (e.g. Carlile & Langley, 2013). More specifically, in current research on management tools, a micro-analytical approach to instrument/activity interactions in management situations has been developed since the 1990s (Aggeri & Labatut, 2010). Inspired by ergonomics (Rabardel, 1995), human–machine interactions (Suchman, 2007), Russian psychology (Vygotski, 1934), pragmatic philosophy (Dewey, 1938), or semiotics (Lorino, 2002), this school of research makes it possible to consider the activity mediated by instruments without reducing its complexity, and highlights how management tools embedded in a material, physical, technical, and social context are used. In particular, the "strategy-as-practice" stream uses this grid to describe how managers perform strategy (Jarzabkowski, 2010; Spee & Jarzabkowski, 2011; Vaara & Whittington, 2012; Whittington, 2006). Moreover, affordances approaches—which, following Gibson (1977), recognize the structural properties in objects that constrain without determining their uses—have recently experienced a renewed interest (Jarzabkowski, Spee & Smets, 2013; Leonardi, 2011). This article is a continuation to this recent research, which proposes concepts and theoretical frameworks that are relevant to our purpose. In particular, we retain the notion of artifact, and we propose to consider the "managerial artifact" as an object of analysis that designates the visual, graphical, physical, and/or material support on which a management tool is based and that presents itself to users in an activity situation. Consequently, this article deepens the question of the structure of managerial artifacts: What are they made of?

Our answer is based on a simple observation: Organizations rely on dashboards, repositories, matrices, procedures, databases, and daily tinkering with countless spreadsheets, which have in common that they list resources, indicators, skills, products, names, entities, actions, etc. This article focuses on this specific dimension of certain managerial artifacts—that is, their list structure, a logical structure that appears recurrent in many management tools.

To go more deeply into this concept of the list, we rely on the thesis of Jack Goody (1977). This anthropologist theorizes the process of the development of writing in oral societies. He describes a process of list-making of oral knowledge, which provides a very concrete answer to our problem: The managerial artifact will obey the structuring principles of this very particular type of text, the list. We show that it generates a very typical structuring dynamic, between rationalization (a categorization of reality according to a certain ordering principle) and contextualization (a questioning of the rigor of the ordering principle in considering the inevitable contingencies of the real work process).

By using this reading framework, this article makes two contributions to the literature on management tools. First, two types of instruments are distinguished: closed (which do not tolerate an exception to the ordering principle) and open (which are able to cope with violations). This distinction makes it possible to avoid a genre confusion, and therefore has implications for practitioners and researchers. Second, we

propose to renew critical research by focusing on three mechanisms that are directly related to the "listic" nature of managerial artifacts: gap-spotting, "table-of-contentism," and "don juanism." Each, in its own way, hinders the ability of actors to open the "black box" tool, which has implications in terms of hegemony and alienation at work. Finally, this will make it possible to reconsider traditional approaches to management tools' appropriation and design.

The first part explores the idea of the listic nature of managerial artifacts, following Jack Goody's thesis on the graphic mode. The second part presents two contributions to the literature that result from this listic structure.

THE LISTIC STRUCTURE OF MANAGERIAL ARTIFACTS

Anthropology is enlightening for understanding the structure of management tools because, as managers have sometimes noticed, the artifacts found during excavations of ancient civilizations are often administrative census or inventory tools, some type of ancestor of management tools (Aggeri & Labatut, 2010; Colasse, 2007). For this reason, Jack Goody's (1977) research on the manner in which oral societies develop artifacts in the form of figures, lists, and tables to ensure their economic development appears particularly fruitful and suggests the idea that many managerial artifacts, despite their apparent diversity, can be likened to lists. This idea then makes it possible to show that they are based on an ordering principle that is typical of the list and, ultimately, to describe a structuration dynamic of management tools.

THE "GRAPHIC MODE" OF MANAGERIAL ARTIFACTS

For Goody (1977), the "graphic mode" is the *sine qua non* condition of any scientific and technical development, the development of oral societies being limited because of the absence of a writing system. This graphic mode begins precisely with list-making, which is indispensable for collective activity:

> But not only is information given simultaneously greater fixity and greater flexibility (for re-ordering) by being put in a written form, this system of storage also provides man with a short-circuiting device. If I write down a list of the contribution of those who attend a funeral, I do not need to make use of my long-term memory at all. (Goody, 1977: 87)

For example, early merchants quickly needed to record receivables and debts that an ordinary market day generated. The first accounting systems thus served to assist the memory of businesspeople and acted as "mnemonic devices" (Carruthers & Espeland, 1991). It is not insignificant that the oldest written texts found by archaeologists in Mesopotamia, Assyria, and Egypt are not epic texts, as one may imagine, but "deeds of sale and purchase, rental, loan, adoption, marriage bonds, and wills together with the ledgers, lists, and memoranda of shopkeepers, secretaries, and bankers as well as the census and tax returns which comprise the necessary output of a highly developed bureaucratic system of government" (Goody, 1977: 79–80). One can even go back to prehistory to find the first accounting systems on notched bones (Colasse, 2007). As soon as people had to organize life in society, they made recourse to administrative artifacts, whose primitive form reveals the "graphic mode." Thus, the first management tools are a

simplified and rudimentary representation of the activity in the form of an item juxtaposition ordering transactions and economic values. This corresponds to the part of the literature that shows that, underneath their modern and diverse forms, current managerial instruments remain "translations of the motley universe of activities into the generic symbolic universe of value judgment, of economic judgment" (Lorino, 2002: 21). They are cognitive tools that allow for improved data storage, information flow, and analytical reflection, thus promoting the rational development of large-scale activities that is the basis of the Weberian bureaucracy. As mediators, tools enrich reality by linking it to readings, values, norms, and organizational universes that allow collective activity to function: They contribute to sense making and the structuration of reality, and they enable remote action and behavioral predictability. In short, management tools allow actors to have a bird's eye view and to step back from their practices, giving access to fundamental aspects of the activity.

However, if tools have a positive impact on the development of effective collective activity, from another perspective, they also impoverish the wealth of activity. Mesopotamian merchants note only transactions; they do not note all the nuances and subtleties of their activity (friendships, animosities, promises, threats, seductions, finesse, or errors that have been made during the day—all of which transactions are only the laconic result). In this sense, the list-making that is presupposed by the administrative instrument is above all—and this is Goody's thesis—a decontextualization, an abstraction, and a detour from the real. According to him, the writing process of written cultures is not a "correct" graphic representation of what is actually occurring but rather a process that imposes its own logic on reality and that mechanically denatures it. A list forces the real to fit into categories that are not "natural":

> In an oral discourse it is perfectly possible to treat 'dew' as a thing of the earth in one context and a thing of the sky in another. But when faced with its assignment to a specific sub-grouping in a list, or a particular column in a table, one has to make a binary choice; it has to be placed either up or down in rows, in the left column or in the right. (Goody, 1977: 105)

Once placed in a list, the element acquires a generality that it would not otherwise have, which opens it to institutionalization processes (it can acquire a certain prestige, be formalized by a political or religious authority, serve for educational purposes as an instrument of knowledge, etc.). The graphic mode will thus ensure the victory of a determined pattern. Goody denounces the tendency of anthropologists to apply a simple graphic process to the study of symbols in oral cultures, which produces results that are a reflection much more of matrix structures than of the reality of these cultures.

Here, too, the literature on management tools joins Goody's thesis, particularly through a critical view. Thus, ergonomic sciences show that the "prescribed," crystallized in tools and technologies, ignores a part of the work reality and individuals' situated skills (De Montmollin, 1984; Falzon, 2004; Rabardel, 1995). From this reduction of the "real activity" arises the proliferation of occupational diseases (Clot, 2010; De Gaulejac, 2009; Dejours, 1998; Maugeri, 2001). Another form of criticism denounces the exaggerated belief in the tool's power to regulate collective activity. Thus, the managers "at a distance" from large multinational groups described by Dujarier (2015) no longer see the activity except through their tools, managing subsidiaries without even having visited them; Lorino (2002) speaks of "technicism" to designate this belief in the superiority of technical

representation over the represented; and Michel Berry (1983) describes the organizational dysfunctions that this "invisible" power of tools causes.

Additionally, many studies in different disciplinary fields have shown that real activity, despite prescriptions, always resurfaces in one form or another in the daily life of organizations. De Certeau (1990), for example, describes the "arts of doing," the uses that slip into the interstices that prescribed models leave vacant. In addition, many authors describe behaviors that develop in response to managerial instruments: ceremonial behaviors (e.g. Boiral, 2003), "rule breaking" (e.g. Martin, Lopez, Roscigno & Hodson, 2013), games with rules (e.g. Roy, 1952), the excesses of quantification (Le Galès & Lascoumes, 2005) or of evaluation (Abelhauser, Gori & Sauret, 2011; Martuccelli & Cassin, 2014), or reactions of the evaluated to the incompleteness of the accounting indicators (Hopwood, 1973; Jordan & Messner, 2012; Otley, 1978). In short, management tools maintain, with real activity, the same relation that Goody describes between the graphic mode and orality. A management tool is the organizational activity reduced to the state of a nomenclature; in its presence, individuals feel this sort of abnormality linked to the fragmentation of reality into discontinuous items, and they react by resistance, subversion, or any form of diversion. It is important to note that none of these studies favors an ideological explanation of these "non-prescribed" behaviors (in which individuals will resist by disagreement with their hierarchy or with the activity representation given by management tools); rather, they describe individuals who, to perform a task, deploy an activity that goes beyond the prescription of the tool.

Thus, research on managerial instruments, marked by a certain ambivalence (instruments are cognitive mediators allowing collective activity, and—from another perspective—are very imperfect and criticizable representations), joins Goody's thesis that the development of graphic artifacts in oral societies, as rationalization, allows the collective coordination, reflection, and circulation of information necessary for the development of any society but, as a simplification of activity, "impoverishes" the richness of the reality and is accompanied by an activity that goes beyond prescriptions. Jack Goody's analysis is interesting because it provides a structural explanation of the instrument/activity interaction problem: The graphic mode, by transforming the oral into the written, constitutes representations that are inscribed into managerial artifacts. However, it remains to deepen the concrete, material form taken by this graphic mode. On this point, Goody gives a very precise answer: The graphic mode is a list-making.

LIST-MAKING AND THE ORDERING PRINCIPLE OF MANAGERIAL ARTIFACTS

Some authors have embarked on the path of describing the structure of management tools: They propose to consider them as texts that describe activity in economic terms (e.g. Boland, 1993; Detchessahar & Journé, 2007; Lorino, 2002; De Sanctis & Poole, 1994). Indeed, it is evident that, as a stream of research on structural analysis has shown, a text such as a novel is not structured in the same manner as a set of "instructions for use" or "poetry" (Cohen, 1966; Eco, 1985; Jakobson, 1963). Goody's proposal adds a more precise element by describing the type of text in question—that is, a list, which arguably generates a particular reading dynamic.

For Goody (1977), the graphic mode begins with the list-making (and, then, in a more sophisticated manner, with figures and with tables) simply because the first "administrative" need of our merchant in an oral society is to help memory by inventorying production and wealth in a list. It is therefore necessary to clarify the concept of the list. Although this object has not been addressed very often in the social sciences, we still find some attempts at theorization (Eco, 2009; Goody, 1977; Sève, 2010).

José Luis Borges (1964) one day amused himself by drawing up an imaginary list that makes us grasp, by contrast, what a "serious" list would be:

> In its remote pages it is written that the animals are divided into:
> (a) belonging to the emperor, (b) embalmed, (c) tame, (d) sucking pigs, (e) sirens, (f) fabulous, (g) stray dogs, (h) included in the present classification, (i) frenzied, (j) innumerable, (k) drawn with a very fine camelhair brush, (l) et cetera, (m) having just broken the water pitcher, (n) that from a long way off look like flies.

Unlike Borges' list, one that would be likely to serve a purpose should respect a certain principle of storage: "A good list, and even a bad one, demands some work, some research for relevant elements, it is a whole intellectual technique of sorting and comparison" (Sève, 2010: 22). This work involves discriminating and coherently grouping items according to certain logical criteria. We will call this principle of contrasting and matching the items of a list "an ordering principle" (whose presence in Borges' list will be sought in vain).

With accounting tools, this principle of ordering appears clearly: According to the French Plan Comptable Général (art. 120-1), accounting is "a system for organizing financial information that makes it possible to capture, classify, and record encrypted basic data and present statements that reflect a true and fair view of the entity's assets and liabilities, financial position and profit or loss at the balance sheet date." In other words, the complex activity of an organization is placed on a list according to a principle of storage based on an accounting managerial philosophy. It is indeed this ordering principle, so elaborate that it is perhaps abusively called an accounting "language" or "grammar," that every manager must understand and learn to master accounting. However, all management tools (related to accounting, strategy, quality management, etc.) have their own ordering principle, which is described in the management manuals and taught in management training: Quality references order activity according to the criterion of customer satisfaction, quality, or safety; an activity-based costing method classifies resources by the cost center; an annual personnel appraisal discussion guide classifies skills; a BCG matrix positions company products or business units by cross-checking two criteria; a process mapping reorders activity according to the route of a raw material or a customer; a procedure lists the acts to be performed in a certain order; etc.

This ordering principle has been recognized in various ways in the literature. Hatchuel and Weil (1992) speak of a "managerial philosophy," which is part of a rationalization wave and refers to the spirit in which the use of the tool is envisaged. Similarly, for technical objects, Akrich (2006: 163) speaks of a "script" or "scenario" to designate the result of a work of "technical formulation, by the designer, of his point of view on the necessary relations between its object and the actors who must seize it."

Underlying this notion, there is the idea of sequencing acts to be performed in a very precise order, which Perrow (1983) also highlights for productive systems that contain a "plan," a logical sequence of tasks to be followed, the result of a rational conception of the activity that is promoted by the formalizations and that is imposed on operators. Focusing on computer systems, Suchman (2007) also describes plans written in software as sequences of instructions and actions designed to accomplish intended ends that must be respected by users. Similarly, De Sanctis and Poole (1994) speak of a "spirit of technology," which refers to the values, goals, and intentions that it contains, the normal course of action to be adopted in its use.

Underlying all these concepts, we feel the list's presence and its ordering principle. However, because they are not interested in the "artifactual" component of the tool, these authors do not draw conclusions on how the managerial philosophy, the script, the plan, or the spirit are concretely inscribed in an artifact. Using the list concept, this inscription can be described as the process by which items are listed according to an ordering principle that reflects a certain managerial philosophy. This aspect can now be analyzed more precisely.

THE LIST AND THE STRUCTURATION DYNAMIC OF MANAGERIAL ARTIFACTS

The manner in which management artifacts based on a listic structure are structured is therefore illuminated: During the list-making process, the ordering principle is somehow "pulled" in two opposite directions. Anyone who has made a shopping list for someone else knows that it is necessary to choose a degree of precision: Should we list the ingredients to buy or, vaguely, evoke the dish that we want to concoct? Should we go so far as to describe the brand and the packaging of the desired product? Should a plan B be prepared if the desired product is lacking, at the risk of causing the list to overflow? The list maker constantly oscillates between the need to reduce, prioritize, and summarize, on the one hand, and the need to anticipate the inevitable contingencies of concrete situations, on the other hand.

This "list-making" dynamic is a poorly described phenomenon in the literature (and not recognized as such), but one can find traces of it in different traditions of research. For example, the history of double-entry accounting describes this movement of list-making over centuries: It has developed, in conjunction with rationality and capitalist methods of production, by making possible currency comparisons between heteroclite goods and large-scale decision-making (Carruthers & Espeland, 1991). Similarly, the methods of scientific management rely heavily on sequencing simple gestures and tasks to perform an action (Braverman, 1998; Taylor, 1914). In the field of human resources management, professions have been progressively segmented and listed, as illustrated by Berliet's classification-of-jobs model, which has inspired contemporary HR grids (Pezet, 2000). More recently, there is an illustration of this same phenomenon of the "calibration" of the list in the recent study by Ragaigne, Oiry, and Grimand (2014), who describe a skill-management tool facing many crises, sometimes too vague (allowing all skills to be recognized) and sometimes too precise (recognizing only skills that are "useful for business"). Finally, in strategic management, studies focusing on the strategic tools' structuring process tackle this question (Aggerholm, Asmuß

& Thomsen, 2012; Belmondo & Sargis-Roussel, 2015; Jarzabkowski, et al., 2013; Spee & Jarzabkowski, 2011): Actors participating in strategic meetings negotiate strategic words via abstraction/specification processes (and then constantly oscillate between a need for generalities, so that actors with different interpretations can be recognized) and precise words, for the sake of efficiency. These are but a few examples of a common problem, "list-making," but a problem that is sporadically addressed in different disciplines of management science and that we describe more precisely here.

On the one hand, with the logic of rationalization, list-making tends toward clarity and completeness, based on the model of the inventory list. Here, the aim is to identify all of the important elements of an activity (inventory of resources, acts to be performed to carry out a task, and elements to be checked before such action or decision). List-making enhances the individual and collective capacity for action, particularly by opening up opportunities for possible actions, highlighting dimensions of organizational activity that would have remained invisible without this distance from the activity. In particular, what March and Simon (1958) note in relation to organizational classification schemes is directly applicable to the ordering principle of the list: Because of them, the complexity of economic reality is reduced, and decision makers are confronted with a simple "bottom line" that does not reflect all possible interpretations. The "absorption of uncertainty" thus enables actors to be set in motion who would otherwise drown in organizational complexity. Similarly, the abstraction from quality to quantity, which is typical of accounting systems, allows for "commensurability"—that is, the comparison of *a priori* non-comparable objects. In a numerical list, singular items are comparable by their relative monetary value and their assessed profitability (Carruthers & Esperland, 1991).

However, this rigorous list-making has the disadvantage of sacrificing aspects of the real activity on the altar of rationality, leading to the "classical" critiques of management tools by, among others, ergonomists, sociologists, and labor psychologists (Dujarier, 2015; De Gaulejac, 2009; Maugeri, 2001) and, in another tradition, observers of the accounting instruments' incompleteness (Hopwood, 1972; Otley, 1978). Thus, the excesses of rationalization are accompanied by what Hatchuel (1996) calls "crises of the prescription relationship," which oblige the tool to reconsider its manner of categorizing the real. For example, a budget will be "forced" to integrate the items with which the accounting ordering principle is poorly accommodated (considering time, via depreciation; risk, via provisions; and the intangible, via goodwill and patents, or the inestimable value of monuments or pieces of art): The flexibility and adaptability of the double-entry accounting system are, moreover, one of the reasons for its success (Carruthers & Espeland, 1991). Thus, the need to rationalize the list is counterbalanced by a need for contextualization—that is, the integration of a part of ambiguity, when the excess of rationalization makes the tool too unrealistic.

On the other hand, a need for contextualization makes the list more ambiguous, leaving room for more possibilities for interpretations and initiatives by actors. The rigor of the ordering principle is attenuated and opened to exceptions, porous categories, vague and imprecise items, and non-exhaustiveness. Additionally, when a tool cannot afford such an ambiguity, complementary tools that are more tolerant of vagueness

flourish: For example, when the budget refuses to sacrifice too much rationalization, complementary accounting tools appear, such as the activity-based costing method, which reintroduces the meaning that was lost in the budget by reintegrating the function of resources. This method allows some ambiguity (the division of activities is questionable, some costs are linked to several activities, and cost drivers may vary widely). Similarly, a balanced scorecard, at the cost of ambiguity (it contains an arbitrary choice of categories and indicators; it is incomplete), gives another view on a company's strategy (Kaplan & Norton, 1996).

However, in return, a "too" contextualized artifact will no longer benefit from the activity's rationalization, which can also cause a crisis of the prescription relationship. By dint of ambiguity, some tools can be viewed as unnecessary gadgets. For example, a brainstorming method can eventually produce a Borges' list (which is the paroxysm of the perfectly ambiguous list), unnecessary because of too much incoherence. Similarly, the critiques concerning the BCG matrix reveal a problem of excessive contextualization. Thus, Hambrick, MacMillan and Day (1982) question the two ordering principles that form the two axes of the matrix: Market share is not necessarily the best indicator for measuring an organization's performance; the life-cycle theory on which the second axis of the matrix rests is debatable; moreover, there is, no unanimity on the division scale to be used on each of the two axes; and, finally, measurement is sometimes impossible due to a lack of figures or a clear definition of the market (hence, the emergence of more precise tools such as the McKinsey or Ashridge matrix).

Thus, managerial artifacts are structured during a permanent oscillation between rationalization and contextualization: They are sometimes very "generic" and sometimes very "situated." It is in this manner that the managerial philosophy (or the script, the spirit, the interpretation scheme) is concretely inscribed in an artifact. Designing a management tool is also the art of drawing up a list that is neither too precise (to leave room for the inevitable contingencies) nor too vague (to avoid becoming an unnecessary list *à la* Borges). When the categories of the list are strongly contested, the tool may enter a crisis of the prescription relationship in the sense of Hatchuel (1996). These moments provoke their rejection or the need to make tools evolve through a "co-design at use" (De Vaujany, 2005).

In short, Goody's analysis makes it possible to understand how the activity representations carried by managerial instruments are concretely inscribed in artifacts. Management tools such as dashboards, repositories, procedures, or matrices are structured in the form of lists whose categories are determined according to an ordering principle, which is refined and adjusted to the contact of reality during crises of prescription relationship. In this spirit, the second part develops two contributions for research on management tools.

THE LISTIC STRUCTURE OF MANAGERIAL ARTIFACTS: TWO CONTRIBUTIONS TO THE LITERATURE

Considering management tools' artifact structure allows us to renew our gaze on two aspects. First, two genres of management tools can be distinguished, which involves adapting ways to manage and teach them. Second, this makes it possible to renew the criticism of management

instruments by considering that their listic structure has a direct impact on users in terms of alienation and hegemony.

THE LIST AND THE GENRE OF MANAGERIAL ARTIFACTS

Management tools are so transdisciplinary that it is difficult to build a cumulative knowledge field (Chiapello & Gilbert, 2013). Therefore, it seems useful to distinguish some genres because there are different types of texts (Jakobson, 1963). Indeed, they generate different mechanisms of appropriation and use. According to Orlikowski and Yates (1994), recognizing a genre consists of distinguishing between common characteristics of purpose and form: The purpose refers to the functions and goals of the artifact; the form refers to the readily observable features of the artifact, e.g. its physical and graphical characteristics. The management tool genre will therefore be constituted by the coherent and socially recognized association of a purpose (e.g. mobilizing, constraining, informing, or stimulating) and a form (certain graphical and physical structural characteristics that are supposed to evoke this purpose).

The (rare) typologies of management tools, none of which is authoritative, insist on purpose but do not associate them with their forms. Thus, the most typical is the function typology (Gilbert, 1998), applied by Cox, Lonsdale, Sanderson and Watson (2005) in their census of the most used tools of the largest American companies: There are strategic tools, marketing tools, human ressources tools, and so on. The typology of David (1998) proposes to differentiate between managerial innovations oriented toward "knowledge," those that are oriented toward "relations" and those that are "mixed." Moisdon (1997) distinguishes four roles played by management tools: In the role of behavior conformation, tools are used to stabilize the organization and normalize behaviors; in the role of investigation of organizational functioning, the implementation of tools makes it possible to update the structuring organizational laws and guidelines; in the role of change support, tools accompany and facilitate change in organizations; and, finally, in the role of exploring the new, the implementation of tools causes the transformation of technical knowledge and occupations. Finally, Simons (2013) distinguishes four types of managerial control levers: belief systems, which are oriented toward the mobilization of individuals based on a common vision and mission; boundary systems, which define constraints and prohibitions; diagnostic control systems, which provide information for the management of the company; and interactive control systems, which promote communication, debate, and learning. In none of these typologies is there a clear link between form and purpose. The structure of the list makes it possible to advance on this point.

We therefore propose to differentiate two genres of management tools in light of the form/purpose dyad: open and closed tools (which we adapt from the Italian writer and semiotician Umberto Eco's distinction between open and closed texts: 1965, 1985).

"Closed tools" push the rationalization logic to its maximum. They rest (at the level of form) on a clear and unambiguous ordering principle and seek (at the level of purpose) the normalization and predictability of users' behavior. For example, the budget's ordering principle tends to be unambiguous (each resource belongs to one and only one category, according to the single accounting logic) and exhaustive (a resource is

intended to fit into a category). Similarly, procedures, protocols, or work processes are sequencing lists that attempt to predict as clearly and accurately as possible all gestures and actions to perform a task. For example, we are struck by the level of accuracy of tools such as quality manuals or by certain customer reception procedures (see, for example, that of a fast-food restaurant reproduced by Morgan, 1999: 14). This type of tool is predictable and reliable, which makes it an effective support for collective activity (each individual is assured that the others will act faithfully in relation to the tool's ordering principle).

It appears that Simons' (2013) boundary and diagnostic control systems belong to this category, in addition to those whose purpose is to make behavior conform in Moisdon's typology (1997). Moreover, F.W. Taylor's scientific organization, from this perspective, is the typical ideal case of an organization based entirely on this type of managerial artifact, which—by reducing activity to simple task sequences—allows an almost perfect control and predictability of behavior (Braverman, 1998). According to the historical phases proposed by Barley and Kunda (1992), it appears that closed tools have proliferated more at certain periods of management history (scientific management and systems rationalism).

Conversely, "open tools" contextualize more than they rationalize. At the level of form, the list-ordering principle tolerates ambiguity to make users think, to offer them a certain view, or to help them make decisions under uncertainty. Indeed, empty or ambiguous free spaces cause the need for reflection and cognitive activity on the part of users thus solicited. This makes behaviors less predictable and involves some delegation of power. Thus, the technique of brainstorming, which produces very "fuzzy" lists, is based on a voluntarily very ambiguous ordering principle to stimulate users' imagination. The BCG matrix, which is somewhat ambiguous based on its two axes, invites participants to take a step back from their product positioning. A strategic scoreboard, which selects a few indicators from all possible indicators, invites managers to interpret them. In addition, many decision-support systems are based on the same principle, selecting information and submitting it to decision makers, without compelling conclusions to be drawn. Thus, these instruments are reflection, imagination, and creativity supports. To achieve this goal, they are somewhat free from the rationality requirement (a little like a poem, which mistreats the categories of meaning and language to elicit emotions: Cohen, 1966).

Thus, Simons' belief and interactive control systems belong to this category. They aim to mobilize energies, motivate, and help decision-making, but have the disadvantage of being bad supports for the coordination of collective activity; Moisdon's management tools, whose role is to investigate organizational functioning and to explore the new, also belong to this category. They also involve delegating a form of power to users or at least acknowledging their capacity for judgment and reflection, which can pose problems of control. According to Barley and Kunda (1992), certain periods of management history have been dominated by the proliferation of these open tools, which are supposed to leave more room for user participation and reflection (periods of welfare capitalism and organizational culture).

Artifact Genre	Form (ordering principle of the list)	Purpose (goal)	Tolerance of multiple interpretations	Desired attitude of the user	Example	Historical diffusion waves (according to Barley & Kunda, 1992)
Closed	No ambiguity, clarity, exhaustivity	To conform, normalize, control, provide predictability	Low	Passive	Budget; Protocols; Proceedings; Software's precise sequential programming; ...	Scientific Management (1900-1923) Systems Rationalism (1955-1980)
Open	Ambiguity, vagueness	To stimulate reflection, to help decision-making	High	Active	Strategic scoreboard; Brainstorming; BCG matrix; Assessment interview guides; …	Welfare Capitalism (1923-1955) Organizational Culture (1980-present)

Table 1 summarizes this genre distinction between open and closed tools.

Since open tools and closed tools are distinct at the level of purpose and form, it is necessary to avoid "genre confusion," which has managerial and theoretical implications.

For practitioners, the appropriation mechanism by which one comes to use a closed tool is more a matter of obedience and application, whereas that of the open tool is more a matter of interpretation. Therefore, the design and implementation of open and closed tools should be considered and managed in a different manner, notably in terms of user profiles and their motivation for use. Moreover, since users' desired attitude is different (one passive, the other active), the pedagogy of the tool is necessarily different: One must place the learner in an "executor" position, searching for the correct answer (for example, when accounting students perform handwriting exercises in an accounting journal); and the other places the learner in an analyst position, considering possible interpretations (for example, when the accounting student has to decide on cost drivers to be applied in an activity-based costing method). Finally, managers should not manage closed and open tools in the same manner.

The former must not suffer an exception, at the risk of deregulating the entire organization, which is based on their predictability; and in contrast, the latter should not be taken as a normalizing tool at the risk of provoking paradoxical injunctions and ritualized couplings.

It is also interesting to note that, in companies, there is a distribution of tools through a hierarchical prism: At higher levels, open tools will be returned, and for lower-level employees, closed tools. Bayart (1995: 28) thus notes that the approach to statistical control differs according to the hierarchical position of each: "the scientific treaty for engineers, popularization book for leaders, technical book for foremen (which does not reproduce demonstrations of theorems but gives examples), and notice for machine operators. Each of these works gives rules of conduct, but with increasingly reduced choices as one goes down to the bottom of the hierarchy." Thus, there will be a hierarchy of management tools that the distinction between open and closed tools makes it possible to highlight, a hierarchy that the so-called "enabling" tools of Adler and Borys (1996) challenge because they are designed to appeal to the intelligence of hierarchically low-level users.

In short, this distinction can help avoid a "confusion of genres," both for trainers and for practitioners. To theoretically deepen the understanding of open and closed tools, it is necessary to delve more deeply into their reading and design mechanisms. To that end, a path is provided by Eco (1985) and the model reader theory. According to Eco, what actually differentiates the open text from the closed text is that the open text works even if it is ambiguous whereas the closed text does not tolerate ambiguity: We cannot imagine a closed text as a budget that would function effectively if it omitted part of the resources or expenditures, or if two of its categories overlapped. On the other hand, a scoreboard is used even if it is known that it does not cover all resources or that some of its categories partly overlap. In short, according to Eco, the incoherence and unpredictability of an open text does not prevent the reader from "enjoying" it.

Thus, it is interesting to open up a research perspective that is in line with this author: The management tool, as a text that is listic in nature, imagines and presupposes a "model user," as a novel imagines a "model reader," who is different depending on whether the tool is open or closed. Closed tools imagine a recalcitrant and unskilled user (modeled on the "X" employees of McGregor, 1960, and as they were viewed by Taylor). On the other hand, open tools are conceived by imagining a smart and motivated user (decision makers and, in some more decentralized organizations, "Y" employees, or in enabling organizations, as described by Adler and Borys, 1996). Eco (1985) shows that an open work succeeds in making readers feel a desired and predetermined emotion, while allowing them to make their own intellectual journey. Future research is needed to clarify how this planned model user guides the design and implementation of management tools, particularly in the case of open tools that establish a very complex relationship with an intelligent model user.

RENEWING MANAGEMENT TOOL CRITICISM

In an enlightening sentence, Goody (1977: 71) describes the fundamental criticism that can be leveled at any institutionalized representation system in terms that well apply to management tool critical research:

> What I have suggested here is that this standardization […] is essentially the result of applying graphic techniques to oral material. The result is often to freeze a contextual statement into a system of permanent oppositions, an outcome that may simplify reality for the observer but often at the expense of a real understanding of the actor's frame of reference. And to shift frame of reference and regard such tables as models of the camshaft behind the jigsaw is to mistake metaphor for mechanism.

"To mistake metaphor for mechanism"—that well summarizes the excesses associated with management tools in the critical literature, as shown with "at a distance" managers (Dujarier, 2015), evaluation sheets (Martucelli & Cassin, 2014), managerial ideology (De Gaulejac, 2009), technicism (Lorino, 2002), or accounting reification processes (Bourguignon, 2005).

It should be noted, however, that what is criticized by these authors is not the fact that the activity representation is unfaithful: It would be absurd to reproach these tools for not "exactly" representing the real activity because, as a mediator, the tool connects the reality of activity to something else (values, beliefs, norms, institutions, etc.), allowing collective activity to function effectively (Lorino, 2002). What is criticized more is the very widespread belief in the tools' ability to represent activity perfectly, and the non-recognition of the necessary and efficient activities

that are deployed by professionals and that are not represented—or are badly represented—by instruments. To use a geographical metaphor, it would be absurd to expect a map to perfectly represent a territory (about the absurdity of which José Luis Borges (1982) and Umberto Eco (1998) were very much amused). On the other hand, we can criticize the belief in the perfection of representation, which may lead us not to cover certain territories of activity that are not "represented" (like travelers who explore only what is shown on their geographical maps) (Martineau, 2015).

However, these criticisms are generic: They are valid for any system of representation. By considering management artifacts based on a listic structure more specifically, we can advance three specific phenomena that are referred to here as "gap-spotting," "table-of-contentism" and "don juanism." Each in its own way tends to obscure the ordering principle of the list, with the tool then becoming a "black box" in the sense of Latour (2005).

First, in its users, the list produces a reading mechanism that insensibly prompts them to "plug the holes" without questioning its ordering principle, and therefore without reflecting on the tool's conveyed managerial philosophy. To describe this phenomenon, we use the term "gap-spotting," borrowed from Sandberg and Alvesson (2011), which refers to a publication logic that consists of finding a gap in the literature and then filling it, but which returns most often to confirm already established theories on new areas. It can be linked to some critical studies that denounce the tool's manipulative side; here, the study by Oakes, Townley and Cooper (1998) is particularly representative. They describe how a business planning tool has succeeded in making a Canadian museum evolve from a primarily cultural institution to a primarily economic institution. By breaking up and fragmenting the meaning, the process of list-making involved by the business planning has contributed to weakening the position of the defenders of the cultural object's complexity (defending its aesthetic, historical, and cultural value, simultaneously representing a cost and an inestimable value), and to strengthening the position of proponents of a commercial conception (the cultural object as a resource in a competition in the cultural market). Staff members were invited to participate in the writing of the business planning (defusing many instances of resistance), but they were not invited to reflect on the ordering principle of the list, only to complete its items.

Thus, this typical "trap" of participative management, which consists of making actors think that they have a voice when plans are inflexibly predetermined (see, for example, Vidal, 2007; Willmott, 1993), finds part of its effectiveness in the list's mechanics of reading, which invite us to "plug the holes." This "gap-spotting" is a logic of filling holes in a list without questioning the ordering principle, which is presented as natural and decided elsewhere. Undoubtedly, this is not the result of the mere mechanics of the list: In a broader manner, this phenomenon joins some institutional pressures, pushing individuals to follow specific dominant forms, by ease and mimicry, to avoid being exposed to deviations, confusions, or sanctions, as institutional theory teaches (see, for example, Scott, 2001).

Second, we find an interesting criticism of the table of contents by Descartes and reported by Sève (2010: 166): "flipping through a table of contents (a list) and choosing what interests us without worrying about how the theses put forward have been founded is the opposite of philosophy and science [...] The list is caprice and laziness." The logic of the list is to equate all indexed terms: Sève (2010: 175) takes the example of the word "metaphysics," which "is only indexed once in the Le Guern edition of the 'Pensées', similar to the word 'chicken' [...]. This makes little sense of the import of Pascal's relation to metaphysics, one of the most discussed Pascalian questions in recent years." Similarly, the managerial artifact selects and presents "what interests," and great is the risk that the

manager will lose interest in the manner in which this was founded. For example, when certain aspects of real activity are simply not "forgotten" by the assessment tools, elements that are considered essential are indexed in the same manner as marginal elements. Therefore, only the manager's professional intelligence will do justice to aspects of the activity that are little or badly considered.

Moreover, we know that a very particular type of list, the viaticum, aims to "offer a quick solution for problems in an easily memorable and striking form and to disregard the complex reasonings that underlie the precepts, retaining only its definitive and immediately usable formulation" (Sève, 2010: 179). Dujarier (2015) gives an interesting illustration of "table-of-contentism." She shows that, regarding what she calls "planners" (managers who must plan the work of others in large organizations), it is preferable to remain in the abstract world of management tools, far from the concrete knowledge of the material, social, and human dimensions of work. This distance is not necessarily ideological or psychological but rather pragmatic: To complete their job, they distance themselves from that which could paralyze their task and build a separation between a "proximal world" and a "distal world" (Dejours, 1998).

Thus, regarding gap-spotting, "table-of-contentism" does not result exclusively from the list's invitation to consult its items without looking at the real activity: Rather, it is part of a typical aspect of the managerial profession. The reading mechanic of the list is involved in this process; however, because it is a table of contents, it invites users to distance themselves from the activity: In summary, it creates an "affordance"—that is, a relational property inscribed by a designer in an artifact that constrains without determining interpretations—for doing so (Gibson, 1977; Hutchby, 2001). However, Descartes, who was himself a user of tables of contents in his own books, wished to promote a reasonable use for it, "to help memory, or rather recollection, and compensate for the possible lack of attention – but not dispense with it." (Sève, 2010: 166–167). If there is a "good use" for management tools, it would certainly be that of Descartes' table of contents: a cognitive support that enables and serves efficiency but does not exempt knowledge from the real activity because, otherwise, "The abundance of lists, tables and repertoires turns into poverty of judgment" (Sève, 2010: 168). Therefore, given the excesses of "table-of-contentism," the responsibility of individual managers is to remain conscious that certain activity aspects are not represented—or are poorly represented—in management tools, while recognizing the advantages of such mediation, which reveals activity aspects that would otherwise be inaccessible.

Finally, with "don juanism," the list and alienation are intimately linked. The reading mechanism of the list entails its user in a dynamic of juxtaposition that is not that of real activity and that can prove pathological. Modern lists "contribute to the rationalization (in the Weberian sense) of the social world as well as to the oppression of individuals who are invited to permanently define themselves while referring to lists: mailing lists, list of friends (Facebook), opinion lists (blogs), preference lists (chats, dedicated sites), and so on."(Sève, 2010: 211). The list has a special responsibility in this phenomenon because its dynamics are such that the user is caught:

> by the double contradictory vertigo of desire and completeness [...] and the constraint of the indefinite lengthening of the list. In social life, the CV is both 'to be complete' (in the past) and 'to be completed' (in the course of a career). This double injunction leads to the great strength of the modern list. It is a formidable social weapon to incite individuals, apparently not tyrannically, to do more for an institution or a social group – to constantly add a new item to their CV. (Sève, 2010: 212)

The use of modern lists goes beyond technicism to become "don juanism": Lists are narcissistic, and the people who produce them take pleasure—and alienate themselves—in these lists. In Mozart's Don Giovanni, Leporello says of Don Juan that he conquers old women for the pleasure of placing them on the list:

> Young women offer the pleasure of sleeping with them, old ones offer the satisfaction of noting them down in a list; or rather say both of them offer both kinds of satisfaction in variable proportions. This "catalog aria" admirably expresses the profound ambiguity of the list. On the one hand, it records in a neutral and external way [...]; on the other, it nourishes and reinforces the additive compulsion that defines donjuanism as such; the list becomes, therefore, an active force in the production of what it is supposed to record only afterwards. The list (as recording) comes afterwards but, actually it has effects even before (as prompting, calling and temptation). [...] Wherever we are encouraged to accumulate items, there is social exploitation of some kind of donjuanism. We accumulate titles, decorations, bibliographical references, official duties, engagements, responsibilities, 'friends', and voyages, whatever can be 'itemized' in a list virtually used in social competition. [...] But dynamics here is nothing more than simple mathematics (I will be in charge of extra responsibilities or make new engagements just to add an item to my CV), which is, the counterfeiting of real dynamics. The list form (which is an antiform, as we have often said) is then particularly pathogenic. (Sève, 2010: 215–216).

Inevitably, one thinks of the additive compulsion of the scientific publication (Sandberg & Alvesson, 2011). More generally, however, it has been shown that employees become caught up in profitability and indicator satisfaction, largely to kill the boredom caused by repetitive tasks (Burawoy, 1979; Roy, 1952). More recently, the phenomenon of "gamification" has penetrated educational institutions and enterprises. Its aim is to increase individuals' intrinsic motivation to use a tool (Ryan & Deci, 2000), using the mechanisms of video games (Blohm & Leimeister, 2013): exploration, collection (scores and trophies), competition (achievement of "rankings"), the acquisition of statuses, challenges (temporal pressures and rivalries), etc. Thus, the list, favorable to additive compulsions, contributes to a gamification of the workplace. It tends to mask certain aspects of real activity because, as Goffman (1991) notes, gamification has the property of evacuating the meanings that people typically attribute to the world that surrounds them.

The listic structure of managerial artifacts is not open to criticism in itself: As Goody recalls, lists contribute to the rational development of societies; thus, management tools in organizations allow activity's fundamental aspects to be highlighted. On the other hand, the list drawthe user into three mechanisms that, if he is not careful, can obscure and mask its ordering principle. More precisely, the list, by its specific structure, presents affordances that favor the deployment of broader psychological, institutional, organizational and social phenomena that can become pathological.

Mechanism	Definition	Example in critical literature
Gap-spotting	To plug the holes in the list without questioning the ordering principle	Participative management critics (Oakes, Townley & Cooper, 1998; Vidal, 2007; Willmott, 1993)
Table-of-contentism	To consult the list's items without questioning its ordering principle	"At a distance" managers (Dujarier, 2015); Managerial Logos effects (Boussard, 2008; Maugeri, 2001)
Don juanism	To compulsively collect items from the list	Repetitive tasks stupor (Burawoy, 1979); Workplace gamification (Blohm & Leimeister, 2013).

Table 2: Three mechanisms arising from the managerial artifact's structure

In summary, this analysis contributes to management tool critical approaches by proposing three mechanisms that can be viewed as obstacles to emancipation (in the sense of Alvesson and Willmott, 1992—that is, the process by which individuals or groups free themselves from repressive social or ideological structures). Indeed, when the ordering principle of the list is masked, suffered, or even enthusiastically espoused by individuals who do not question it, it plays a part in domination and alienation through a process of reification of the world (Lukács, 1960), which produces heteronomy in the sense of Castoriadis (1975). Lists that are (skillfully) hidden make it impossible for individuals to become aware of themselves and to thus appropriate workplace ends, means, and social relations. However, as recent calls invite, criticism—which is often too sterile—must also offer constructive recommendations and be performative (Spicer, Alvesson & Kärreman, 2009). From this perspective, it is up to management trainers and teachers to participate in this emancipation (Huault & Perret, 2012) by disclosing the ordering principles underlying managerial artifacts.

DISCUSSION AND FUTURE RESEARCH PATHS

Despite the proliferation of research on management tools, our understanding of their artifact component is still embryonic. To partially overcome this lack, we propose in this paper to focus on a specific dimension of certain managerial artifacts by examining their listic structure.

Some managerial artifacts (dashboards, procedures, matrices, repositories, etc.) are based on an item juxtaposition that carries an activity representation according to an economic ordering principle. They are characterized by a list structure, which, similar to the graphic mode, has the tendency "to arrange terms in (linear) rows and (hierarchical) columns in such a way that each item is allocated a single position, where it stands in a definite, permanent, and unambiguous relationship to the others" (Goody, 1977: 68). In a sense, it is their "look": In a managerial situation, we know that we are in their presence when we are addressing a decontextualized and discontinuous stack of items that are supposed to represent the organizational activity in a descriptive or normative manner. Thus, total quality management (TQM) relies in part on a complex list system (repositories, good practices, etc.); the balanced scorecard consists of four lists of indicators; SWOT is composed of four lists of phenomena that affect the company; the BCG matrix is the cross-checking of two lists; etc. Even enterprise resource planning (ERP) relies in part on a variation, in a particularly complex computerized version, of a set of lists that are supposed to coherently communicate. Moreover, Bernard Sève (2010) notes that computers have increased the capacity to make lists in a safer and faster manner that is all the more powerful because it is simultaneously invisible and automated (with almost no more human intervention); this most likely explains the proliferation of management tools in organizations.

Our analysis is limited, however, by the diversity of managerial artifacts. Indeed, this article has focused on managerial artifacts whose structure is mainly based on a list, but it does not account for the structure of all management tools. In particular, some rely on modeling of activity (in terms of cause–effect relationships, statistical probabilities, temporal functions, random causes, etc.). The activity segmentation performed and the resulting artifact then relate relatively little to the listic structure. The historical example of the statistical control maps of process invention, in the 1920s, is an excellent illustration of the manner in which Walter Stewhart segmented and modeled activity in a graphic form that does not fall under list-making (Bayart, 1995: 23): "The control card allows us to spatially visualize the concept of dispersion on a flat sheet while showing the limits that this dispersion must not exceed as long as production remains under control. It represents the variability of the manufacturing process over time in a perfectly visible and sensory way."

Although the present analysis can most likely be largely repeated (because these artifacts are also part of the graphic mode described by Jack Goody), the reading mechanisms of these types of artifacts are not exactly the same, and remain for the moment somewhat unexplored. It would therefore be interesting, in future studies, to continue this type of analysis, considering that some management tools fall under another structure, which remains to be described precisely and which gives rise to other reading mechanisms. Moreover, devices such as TQM or ERP are clearly complex systems that include lists and other types of structures, which they articulate in cross-flows of evolutionary and interrelated data. Research could explore how these differently structured artifacts articulate within these devices.

Moreover, for the moment, this analysis is purely theoretical and lacks empirical verification. From a methodological perspective, future research should be based on a specific device, considering the physical, material, and tangible aspects of the designer/instrument/user interaction. This is necessary because, for the time being, many very diverse phenomena are classified in the literature under various designations (management tools, instruments, devices, and many others). The expression "managerial artifact" emphasizes the material and contextual dimension of management tools, which presents itself to actors in situations as text whose structure is inscribed in an artifact. Thus, it is not the idea of a tool ("quality management"), complex system ("quality assurance"), or discourse (declaration about quality tools usage) that should be studied but an observable artifact being manipulated by users (a quality reference or a quality procedure).

Two specific methodologies can then be used. The first borrows from ergonomic methods of activity analysis (Clot & Faïta, 2000; Rabardel & Pastré, 2005): They make it possible to analyze professionals' real activity *in situ*, a central element of instrument/user interaction. More precisely, the professional didactics school of thought (Pastré & Vergnaud, 2006) provides precise methodological tools that make it possible to highlight the "organizing concept" of a professional activity: It would then be interesting to compare it to the ordering principle inscribed in a managerial artifact that is supposed to frame and assist this activity, or to draw inspiration from this "organizing concept" when designing a management instrument (Béguin, 2007; Béguin & Cerf, 2004). Second, the methodology of the "dialogic mediated inquiry" (Lorino, Tricard & Clot, 2011) should be used. This makes it possible to avoid falling into a representational view of organizational phenomena in general and management instruments in particular. Thus, management tools that are both reducers and facilitators of activity should be studied to account for their mediating role in a semantic and pragmatic manner.

Finally, as a result of this article, two research paths that are specific to management artifacts based on a listic structure are highlighted. The first relates to their appropriation, in terms of the collective bargaining of the list, and the second relates to their design, in terms of affordances.

As we have shown, the appropriation process can partly be viewed as a list-making process that constantly oscillates between contextualization and rationalization during the prescription relationship crisis. The rational, social, political, symbolic, and psychological considerations that are proper to any appropriation (De Vaujany, 2005; Grimand, 2006; Lorino, 2002) are inscribed in the artifact during a negotiation process of the list's ordering principle. If it is too rationalizing, the ordering principle will be challenged on behalf of real activity (through resistance, unexpected or diverted uses, subversion, etc.), and the expected appropriation process will be challenged. If it is too contextualizing, the tool will lose its effectiveness and usefulness, as occurs with regulations or laws that become so consensual that they lose all practical relevance; and, again, the process of appropriation will be challenged. In summary, successful appropriation processes will be those that reach a collective negotiation of the ordering principle, as illustrated by Berliet's elaboration of job classifications (Pezet, 2000). Indeed, in response to Taylorist organizing principles, which more closely reflect an organization than the relationship of an individual to the organization, engineers retained a different managerial philosophy (information theory, a new "episteme" according to Pezet) that was perceived as better representing workers' activity. The new ordering principle was negotiated through a legitimation and bargaining process involving unions, experts, management, and companies. In this article, we have somehow isolated the list-making activity as though it were the work of a lonely designer: It is a narrative bias that allowed us to better account for it. In reality, however, the formation of the list is often marked by complex legitimation, meaning-creation, and a negotiation process, including many stakeholders—of which the Berliet case is a good example.

In this respect, studies inspired by actor–network theory (Akrich, Callon & Latour, 1988; Callon & Latour, 1992) to analyze how actors and "actants" translate instrumentations in terms of their strategic interests did not consider this listic perspective: Which rationalization or contextualization strategy did they perform during their translation operations? Indeed, if actors reshape the managerial artifact when they appropriate it, then they must negotiate its ordering principle in the political arena that is created on this occasion: A strong rationalization can serve the interests of those who want more control and surveillance, whereas a strong contextualization can introduce an ambiguity that is conducive to zones of uncertainty. Moreover, open and closed tools are not negotiated in the same manner in this arena: Whereas the normalizing objectives of closed tools are clear, the stakes are less so in the case of open tools (as in the case of the Canadian Museum, described by Oakes, et al., 1998). Furthermore, how are these negotiations structured even though the list-reading mechanism involves "don juanism," "table-of-contentism," or "gap-spotting" phenomena? Are actors aware of these mechanisms when negotiating tools? An analytical perspective that considers the managerial artifact's listic nature would make it possible to go deeper into understanding the appropriation of management tools, particularly the legitimization dimension of the list-ordering principle.

Finally, the managerial artifact's listic structure has consequences in terms of the design of management tools, which (for the moment) is a largely unexplored question (Béguin, 2007; Béguin & Cerf, 2004). The question would then be how designers physically and materially inscribe, in an artifact, the "user model" that they imagine. This would contribute to

current information systems research, which is increasingly oriented toward the recognition of affordances (Leonardi, 2011; Orlikowski & Scott, 2008). The artifact's listic nature, in our opinion, is a relevant contribution to this reflection, which remains (for the time being) embryonic (Jarzabkowski & Pinch, 2013). Indeed, if affordances are relational properties inscribed in an artifact (Gibson, 1977; Hutchby, 2001), then we propose to consider the listic nature of these affordances: The list, without completely determining, constrains a typical manner of interpreting. Thus, "gap-spotting," "table-of-contentism," and "don juanism" are pathological forms of a characteristic underlying the reading process because they are favored by the list. Similarly, open tools are conceived as affordances for multiple interpretations (and, hence, the user's reflection, cognitive activity, and motivation), whereas closed tools are designed to constrain certain behaviors and discourage others. In short, in the affordance concept, there is something that falls within the list-reading mechanism that remains to be studied.

CONCLUSION

In this article, we focused on the "artifact" dimension of management tools. Using the work of the anthropologist Jack Goody (1977) on the evolution of oral societies toward written societies, we have shown that certain managerial artifacts are based on a listic structure. This concept of the list appears fruitful for several reasons. First, it makes it possible to describe the structuring dynamics of these managerial artifacts, which evolve between rationalization and contextualization according to a list-ordering principle: It makes it possible to reconsider the management tools' appropriation and design processes from a new perspective. Second, the list makes it possible to distinguish between open and closed tools, two genres that call for different design and implementation modes and that can open the way for an analysis of the "user model" inscribed in artifacts. Third, the concept of the list makes it possible to feed management tool criticisms, with the recognition of three typical phenomena ("gap-spotting," "table-of-contentism," and "don juanism") that participate in the tools' opacity. Finally, it makes it possible to consider two research paths on the appropriation and design of managerial artifacts. However, the "graphic mode" is not limited to lists alone: In particular, what Goody calls "figures" generate different reading mechanisms and echo those management tools that are based on modeling. Managerial artifacts present other structures that have yet to be described to better understand the composition of management tools.

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