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ORIGINAL RESEARCH ARTICLE

Experimentally Validated Surveys: Potential for Studying Cognitive and Behavioral Issues in Management

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Abstract

In management, addressing behavioral and cognitive issues empirically is particularly challenging, as it requires combining both internal and external validity with multilevel data collection. The traditional quantitative methodologies used in this area, which are surveys and laboratory experiments, are ill-suited for this purpose. This paper presents a promising, innovative methodology, the experimentally validated survey (EVS), which allows researchers to face this challenge. The EVS relies on the implementation of survey questions previously validated by a controlled experiment. This paper adopts a threefold approach: descriptive, achieved by proposing a structured review of the recent body of literature; practical, achieved by discussing technical issues that one may encounter while running an EVS; and critical, achieved by discussing the advantages and limitations of such methodology for management scholars. Our main contribution is initiating a dynamic movement toward the importation of this innovative methodology into management research.

Keywords: *Methodology; Validity; Experiments; Surveys; Behavior*

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Have you heard about the latest reality TV adaptation of *The Truman Show*, in which real managers are unknowingly encased in an artificial world entirely controlled from the outside and permanently observed? Of course, you have not. Fortunately, it does not exist.[1] However, management researchers may sometimes envy biologists and entertain dark fantasies of putting managers or entrepreneurs under a glass case to observe, measure, and ultimately understand how their behaviors and cognitive processes impact firms' outcomes. However, since this cannot be done, what is left for management researchers?

This methodological issue is of particular interest in the microfoundations movement, which aims to link individual processes to actual firms' outcomes (Abell, Felin, & Foss, 2008). More specifically, in microfoundations research, there is a strong interest in behavioral and cognitive issues. These considerations are not new and go back to Simon's (1947) early work on administrative behavior, which was concerned with how individual decision-making and motivation affect the organizational performance. Recently, there has been renewed interest in the behavioral foundations of organizations and decision-making (Felin, Foss, & Ployhart, 2015; Phan &Wright, 2018). Behavioral and cognitive theories and concepts are more and more systematically mobilized in diverse fields of the management literature, including in public policy with the

1. There are multiple examples of managerial research experiments. One of the most famous attempts was the Hawthorne experiments conducted by Elton Mayo in the 1920s (Gillespie, 1991). More recently, 'lab-in-the-field' has built upon this tradition by implementing experimental games onsite with actual managers (Gneezy & Imas, 2017). Another approach consists of observing managers in their natural environment, as realized by Mintzberg (1973). However, those attempts are either very limited in terms of the timeline and scope of the observations or are always conducted in naturalistic environments where observations are noised by factors that the researcher cannot control from the outside. Indeed, conducting a *Truman Show* type of managerial experiment is neither feasible nor desirable from an ethical perspective.

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concept of 'nudges' (Thaler & Sunstein, 2008), organizational behavior scholarship (Moore & Flynn, 2008), strategy (Laroche & Nioche, 2015; Powell, Lovallo, & Fox, 2011), and entrepreneurship (Busenitz & Barney, 1997; Grazzini & Boissin, 2013; Phan & Wright, 2018).

However, empirically exploring the behavioral microfoundations of management[2] is challenging. First, when focusing on behavioral and cognitive aspects, the researcher is confronted with the nonobservability of some behavioral and cognitive characteristics, which can only be either revealed or self-reported. The choice between one and the other involves a tradeoff between the internal and external validity of the empirical constructs. Second, it requires the researcher to adopt a multilevel analysis. This implies that during the same data collection process, data on the individual and on the firm or organization level must be collected.

To collect data for exploring how behavioral and cognitive aspects affect organization outcomes, researchers essentially rely on survey data. For example, empirical papers on entrepreneurial cognition rely predominantly on surveys (58%), secondary data analyses (34%), and interviews and case studies (15%), while only 8% use experimental designs (Bird, Schjoedt, & Baum, 2012). This implies that "in most cases, the behaviors are self-reported and are broad and unspecific in nature" (Bird & Schjoedt, 2009, p. 334). In turn, this raises the issue of the appropriate measures by which to establish the validity and reliability of instruments used to measure behavioral or cognitive characteristics (Aguinis & Lawal, 2012; Bird et al., 2012).

One way to address this issue is to investigate the potential contributions of experimental economics, as done by psychology and behavioral economics scholars (Hisrich, Langan-Fox, & Grant, 2007). Indeed, within an experiment, preferences or behaviors are not self-reported by the subjects but are revealed through an incentivized choice. Experimental economics provide results with strong internal validity and reliability. However, despite its potential for application, this methodology is still underused in the management field (3% in Chandler & Lyon, 2001; 8% in Bird et al., 2012, 10.7% in Grégoire, Binder, & Rauch, 2019). This is mainly because experimental economics also suffers from limitations such as limited external validity, high cost, and limited sample sizes. In the specific context of empirically exploring the behavioral microfoundations of management, laboratory experiments do not allow for a multilevel analysis, as they are unconducive to linking individual preference with actual managerial actions or outcomes within the same data collection.

To overcome the challenges raised by the empirical exploration of the behavioral microfoundations of management, this paper presents and reviews a new methodology by which to elicit individual preferences while collecting information at the organizational level. This alternative methodology proposes using survey questions previously validated by an economic experiment to ensure their reliability (refereed here as EVS – for experimentally validated survey). Indeed, a growing body of experimental literature has shown that a well-chosen direct question validated by a prior experiment may be able to capture individual preferences as reliably as experimental economics (Ding, Hartog, & Sun, 2010; Dohmen et al., 2011; Falk, Becker, Dohmen, Huffman, & Sunde, 2016; Hardeweg, Menkhoff, & Waibel, 2013; Johnson & Mislin, 2012; Vieider et al., 2015; Vischer et al., 2013). Therefore, EVS might allow us to overcome empirical challenges in the exploration of the behavioral microfoundations of management. On the one hand, validation of the questions by an experiment ensures the internal validity of the behavioral constructs. On the other hand, implementation of a large-scale survey to the relevant population in a naturalistic environment ensures external validity. Moreover, EVS allows collecting data on the individual and organizational levels, such as the firm performance, during the same data collection process.

This paper presents this innovative methodology. In the process, it expands upon its main advantages and achievements (i.e., the questions that have already been validated and are 'ready for use'), gives some practical recommendations, and discusses specific implementation issues when running an EVS. Our main contribution is initiating a dynamic movement toward the importation of an innovative methodology into the research field of behavioral and cognitive approaches in management. In doing so, we respond to the call of management scholars, underlining that "experiments do not have to be employed alone" and that "using experiments in conjunction with other methods can be especially fruitful endeavor" (Williams, Wood, Mitchell, & Urbig, 2019, p. 217). The paper adopts a threefold approach: descriptive, achieved through a structured review of the recent body of literature; practical, achieved by discussing technical issues that one may encounter while running an EVS; and critical, achieved by discussing the advantages and limitations of the methodology for management scholars.

This paper is organized as follows. The 'Lab experiment or survey?' section compares the advantages and limitations of the two main quantitative methodologies: surveys and lab experiments. The 'EVS and hybrid methodologies' section presents the EVS's advantages and positions the EVS among the other hybrid methodologies used in management. The 'Experimental validation of survey questionnaires: a review' section reviews the literature on the EVS. The 'Experimental validation of a survey question: a practical guide' section tackles practical issues that one may face in the process of

[2] There are also qualitative approaches to address microfoundational issues. See, for example, Vo, Culié, and Mounoud (2016). However, as this paper focuses on quantitative methods, the reader interested in the issue of qualitative methods can find more information in the review paper on microfoundational research by Felin et al. (2015).

experimentally validating a survey question. Finally, the 'Discussion and conclusion' section discusses the potential for use of the EVS in management studies and concludes.

Lab experiment or survey?

As they face the choice between surveys and lab experiments, researchers in management have to weigh the pros and cons of both methods. Survey techniques meet several of the managerial field's research requirements. They can be widely implemented on large samples at the national or even international level, and they yield massive amounts of data at a limited cost. Web-based and email questionnaires have the advantage of being quick and easy to implement. Surveys based on open questions allow for gathering subjective data, such as the preferences of large representative samples, thus enhancing the external validity. Nevertheless, this method is subject to several response biases (Zikmund, Babin, Carr, & Griffin, 2013). For instance, the hypothetical bias occurs when respondents answer questions in a way that differs from how they would have behaved in real life, expressly because a stated behavior would not have any real implication or consequence (Bohm, 1972). The social desirability bias – the tendency for respondents to answer questions in such a way that others, and particularly the interviewer, may view them favorably – may be the most studied response bias (for structural scholars, see Crowne & Marlowe, 1960; Paulhus, 1991).[3] These biases are problematic, as they affect the way in which responses are provided and create systematic measurement errors (Lavrakas, 2008). Response biases impede the identification of the origin of variations of the explained variable, thus affecting the internal validity (Kirk, 1995).

An economic experiment consists of putting subjects (typically, a student population) in an artificial economic situation, in which every parameter is set and controlled by the experimentalist and wherein subjects have to make choices and decisions that are all observed and measured by the experimentalist. Experiments are, by definition, characterized by high control of the conditions and parameters of data production (Fehr et al., 2002). In fact, in order to reduce noise, context and background are removed from the experiments. This allows not only for making accurate and reliable measurements but also for performing diverse parameter manipulations (always one by one) that would be impossible in a real-life setting (Charness, 2010). The subsequent observations enable researchers to establish solid causality between external signals and individual behaviors (Charness, Gneezy, & Kuhn, 2013). In other words, experiments are characterized by high internal validity. Another significant advantage is the replicability of experiments. Indeed, laboratory experiments provide a platform that can be used by a wide range of researchers (Charness, 2010). The latter can test previous results in order to verify their robustness, manipulate an existing parameter in order to further explore its effects, or add a parameter in order to observe its additional effects (Fehr et al., 2002). However, the large-scale implementation of this method is extremely difficult, if not impossible. The major criticism against experiments concerns their external validity (Charness, 2010; Fehr et al., 2002; Harrison & List, 2004). Indeed, since results are produced in an artificial environment, they may be barely generalizable to the real world. A central question concerns which populations, settings, treatment, or measurement variables for which a lab-produced experimental effect can be generalized (Campbell & Stanley, 1966). Additionally, lab experiments involve high costs (game programing, equipment, and subject remuneration). Therefore, they are only suitable for small samples and are often made up of students, which raise the issue of sample representativeness and, more broadly, of external validity (Barbosa, Fayolle, & Smith, 2019).

Thus, in terms of the validity, surveys and lab experiments display opposite characteristics. Survey results have a higher external validity than experimental results, meaning that elicited preferences may be closer to reality and more robustly generalized. Inversely, the strict control of the data production process in experiments ensures higher internal validity than exists with survey data, making measurements of preferences and inferences of causal links more reliable. However, as mentioned earlier, the artificial environment of the experimental game may bring subjects far from the real environment, in which they are used ti make decisions. Therefore, the results obtained in the lab may not be generalizable to reality (low external validity). Further, in terms of cost relative to the amount of data collected, surveys are much more advantageous, as they allow for collecting massive quantities of data from large samples, whereas experiments incur high implementation costs for gathering little information on small samples.

EVS and hybrid methodologies

Emerging literature in economics (Dohmen, Falk, Huffman, & Sunde, 2005; Dohmen et al., 2011; Falk et al., 2016) has proposed an innovative methodology, the EVS, to overcome the limits of lab experiments and surveys. This methodology relies on the implementation of survey questions previously validated by a lab experiment. On the one hand, the validation of the survey questions by a controlled experiment ensures the internal validity of the results. On the other hand, the implementation of the validated survey on large samples in a

[3] Many other response biases have been reported in the literature (acquiescence bias, overreporting bias, confusion regarding word meanings, strategic response bias, and retrospective bias).

naturalistic environment at the national or even international level enhances the external validity of the results. This methodology therefore combines the advantages of both lab experiments and surveys.

However, the EVS technique is not the only alternative to surveys and lab experiments proposed in the literature. In fact, as far as experiments are concerned, a wide range of hybrid methodologies has been used in management and economics. Field experiments are the most well-known alternative to laboratory experiments (Huber, Sloof, & Van Praag, 2014; Sadoff & Samek, 2019; Song, Liu, Lanaj, Johnson, & Shi, 2018). These experiments are conducted in naturalistic environments and use nonstudent populations. Often, the subjects of the experiments are not aware that their decisions are being studied. The main advantage of field experiments relates to the external validity of the results. In fact, as the experimentalist targets a specific population in its natural environment, the result will naturally be more applicable to the context studied. However, with field experiments, it is not possible to control the variables as closely as with lab experiments. Thus, field experiments yield a lower internal validity. To overcome this limitation, researchers (Gneezy & Imas, 2017; Harrison & List, 2004) have proposed a new experimental methodology called 'lab in the field', which combines elements of both lab and field experiments. The aim of 'lab in the field' is to provide a methodology that maximizes the pros and reduces the cons of lab and field experiments. This methodology consists of conducting a standardized validated lab experiment in a naturalistic environment using a population related to the study. Resorting to a validated lab experiment ensures tight control and the internal validity of the results. Targeting the relevant population and implementing the experiment in a naturalistic environment enhance the external validity. However, as with lab experiments, this methodology involves high costs (game programing, equipment, and subject remuneration) and is therefore only suitable for small samples. To implement experiments using large samples, researchers may turn to web-based experiments. For instance, Graf, König, Enders, and Hungenberg (2012) analyze how managers can reduce competitive irrationality in a sample of 934 managers using web-based experiments. In that case, the experiment is run in the form of a survey administered over the Internet. The large number of participants improves the external validity, as it can provide the "realism of field data" aspect (Falk & Fehr, 2003, p. 403). However, web-based experiments "are somewhat limited in their possibilities to control for the environment in which research participants must make their decisions" (Graf et al., 2012, p. 393) and therefore provide results with lower internal validity. Overall, the advantage of EVS in comparison with these methodologies is that it achieves a good balance between internal and external validity and implementation on large-scale samples at a reasonable cost. This is of particular importance for empirically exploring the behavioral microfoundations of management. Indeed, it requires combining internal and external validity of the measures, but a multilevel analysis is also required. To link individual preferences with actual managerial actions or outcomes, the researcher should, within the same data collection process, collect data on the individual level and on the firm or organization level. With the EVS, the behavioral results of the surveys can be linked to organizational-level variables, such as the firm performance, whereas the limited sample size of lab experiments and 'lab in the field' results does not make this multilevel analysis possible. With the implementation of a traditional survey or a web-based experiment, linking micro- and macro-variables is possible, but the internal validity of the behavioral results collected with these methodologies is lower than with EVS.

Some researchers also propose combining different methodologies and using experiments to complement traditional management sciences methodologies such as observational research or surveys (Croson, Anand, & Agarwal, 2007; Zellmer-Bruhn, Caligiuri, & Thomas, 2016). Emerging literature (Barsade, 2002; Bekir, El Harbi, Grolleau, & Sutan, 2015; Chang, Lusk, & Norwood, 2009; Coppola, 2014; Hainmueller, Hangartner, & Yamamoto, 2015) aims at comparing questionnaire and experimental methodologies. For instance, Barsade (2002) measures emotional contagion using both participants' self-reports and observers' ratings of mood via video-tape ratings of the participants interacting in a group exercise. Bekir et al. (2015) investigate what individuals maximize: efficiency, equality, or positionality. To do so, they compare results obtained with incentive compatible choices (experiment) with results obtained by hypothetical surveys. Coppola (2014) compares three methods of risk preference elicitation (lottery-choice tasks, Domain-Specific Risk-Taking scale, and general multi-item questionnaire) and then compares the results to real respondents' behaviors in real life (such as having risky assets, smoking, and practicing risky sports). These studies use a combination of several methods, for example, experimental and self-reported measures, to triangulate or to compare the results. The aim of the EVS is neither to obtain two measures of the same factor nor to compare their differences. The EVS proposes experimentally validating survey questions through an economic experiment to ensure their reliability. Once the questions are validated, it is not necessary to perform a new experiment. Instead, the survey questions can be directly administered to a large sample by targeting a relevant population. Then, researchers no longer need to combine surveys and experiments. The internal validity of the results is ensured by the controlled experience, while the external validity is guaranteed by the implementation of the large-scale survey to the relevant population in a naturalistic environment.

Table 1. List of experimentally validated measures in the literature

Preferences tested	References	Experiments used for validation	Surveys' measures	Validation methods
Altruism	Falk et al. (2016)	Dictator game (1st player)	Scenario transposed from an experiment + Self-assessment questions	Descriptive (correlations), Measure of predictive validity (regression analysis) Out of sample validity
Positive Reciprocity	Falk et al. (2016)	Investment game (2nd player)	Scenario transposed from an experiment + Self-assessment questions	Descriptive (correlations), Measure of predictive validity (regression analysis) Out of sample validity
Negative Reciprocity	Falk et al. (2016)	Prisoner's dilemma or Ultimatum game	Scenario transposed from an experiment + Self-assessment questions	Descriptive (correlations), Measure of predictive validity (regression analysis) Out of sample validity
Risk aversion	Dohmen et al. (2011)	Lottery choices (Holt and Laury, 2002)	Self-assessment questions	Measure of predictive validity (regression analysis)
	Ding et al. (2010)	Lottery choices	Scenario transposed from an experiment + Self-assessment questions	Descriptive (correlations, comparison of distributions)
	Hardeweg et al. (2013)	Lottery choices	Self-assessment questions	Measure of predictive validity (regression analysis)
	Vieider et al. (2015)	Lottery choices	Self-assessment questions	Descriptive (correlations, comparison of distributions)
	Falk et al. (2016)	Lottery choices	Scenario transposed from an experiment + Self-assessment questions	Descriptive (correlations), Measure of predictive validity (regression analysis) Out of sample validity
Time preference: discounting	Vischer et al. (2013)	Time preference experiment	Self-assessment questions	Descriptive (comparison of distributions) Measure of predictive validity (regression analysis)
	Falk et al. (2016)	Time preference experiment	Scenario transposed from an experiment + Self-assessment questions	Descriptive (correlations), Measure of predictive validity (regression analysis) Out of sample validity
Trust	Johnson and Mislin (2012)	Investment game (1st player)	Self-assessment questions	Measure of predictive validity (regression analysis)
	Falk et al. (2016)	Investment game (1st player)	Scenario transposed from an experiment + Self-assessment questions	Descriptive (correlations), Measure of predictive validity (regression analysis) Out of sample validity

Experimental validation of survey questionnaires: A review

The EVS technique has been recently developed and discussed by a small number of scholars, mostly in the 2010s. Only eight papers on the subject have been identified,[4] all of which are recent, reflecting the EVS's status as an emerging methodology. In a 2002 paper, experimentalists Fehr et al. began reflecting on how to transpose a robust and tried-and-tested economic experiment (the trust game) into a survey in order to implement it more broadly across larger samples and collect massive amounts of data. However, their aim was not to strictly compare experiment- and survey-elicited preferences in order to validate the latter using the former but was to adapt a classic economic experiment (the trust game) to the form of questions suitable for a survey. This was *not* an EVS, but their research question attests to the need for experimentalists to find ways to enlarge the samples based on which their experimental measures were implemented in the early 2000s.

The EVS technique genuinely emerged in the early 2010s, with scholars showing interest in validating survey questionnaires through lab experiments (Ding et al., 2010; Dohmen et al., 2005, 2011; Falk et al., 2016; Hardeweg et al., 2013; Johnson & Mislin, 2012; Vieider et al., 2015; Vischer et al., 2013). These studies are all from the economic field and focus on the measurement of economic preferences (risk aversion, time preference, trust, etc.) that are already reliably elicited by tried-and-tested experiments. These studies attempt to validate two types of surveys. In most cases, the validated survey consists of a series of self-assessment questions (asking participants to position themselves in relation to an assertion of the type 'generally, do you consider yourself a person …'). In a few cases, the validated survey consists of self-assessment questions accompanied by scenarios that transpose an experiment into a questionnaire.

These eight studies (whose experimentally validated measures are listed in Table 1) all rely on the experimental validation of survey questions but are not constructed with the same research objective. The first category of studies (Ding et al., 2010; Dohmen et al., 2005; Hardeweg et al., 2013; Vieider et al., 2015) focuses on measuring risk aversion. First, Ding et al. (2010) and Dohmen et al. (2005) paved the way by exploring the possibility of measuring risk aversion using an

[4] A work in progress by Bauer & Chytilova has been attempting to experimentally validate a survey module to measure economic preferences in Kenya, but the results and protocol are not available yet. The preanalysis is available at https://osf.io/pvf54/.

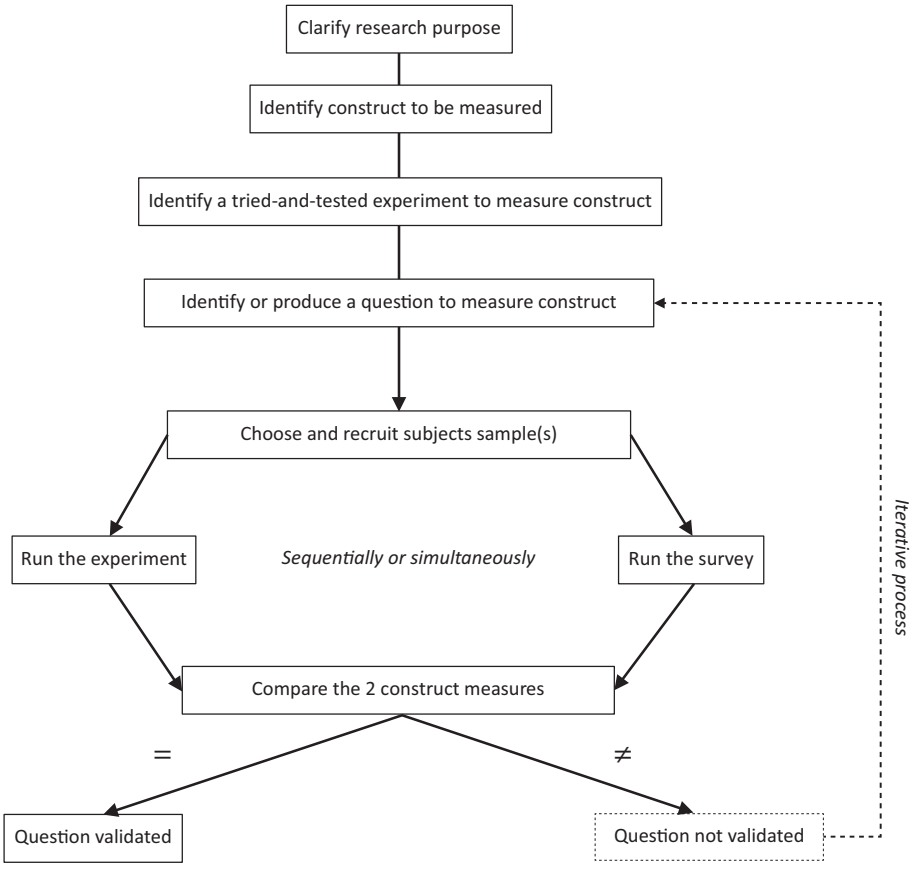

Figure 1. Work stages for the experimental validation of a survey question

EVS question. Their research seeks to determine which among a pool of questions (*ad hoc* or taken from other existing surveys) best reflect the risk attitude of the participants. Then, Hardeweg et al. (2013) experimentally validated survey questions using a particular target sample (rural households in a Thai region) in order to benefit from an EVS on risk aversion for future research with the same sample. Subsequently, Vieider et al. (2015) conducted a large-scale study in collaboration with universities in 30 different countries to compare risk aversion measurements from an experiment and a survey. They aimed at establishing whether there is a correlation between these measures (surveys vs. experiments) within and between countries in order to be able to use the same EVS in different countries with different cultures in the long run. The second category of studies (Johnson & Mislin, 2012; Vischer et al., 2013) aims at experimentally validating questions from existing national or international surveys such as the German Socio-Economic Panel (GSOEP) or the World Values Survey (WVS). Johnson and Mislin (2012) focus on trust, whereas Vischer et al. (2013) investigate time preferences. In both cases, the authors neither carried out the experimental study nor administered the questionnaire but cross-analyzed data from past experiments with the responses collected by the GSOEP or the WVS. The third and last category of studies has a research-improving goal, aiming to propose questions, either ad hoc or from existing surveys, or scenarios that are as reliable as the experiments, so that the academic world can benefit from a set of reference questions that can be reused later (Dohmen et al., 2011; Falk et al., 2016). The work of Falk et al. (2016) seeks to produce what they call an experimentally validated 'survey module', measuring six different types of preferences. The use of a standard module of questions by the entire academic community will improve the comparability of studies.

Experimental validation of a survey question: A practical guide

Based on the literature on the EVS reviewed in the previous section, we represent in Figure 1 the work stages for experimentally validating a survey question. Figure 1 derives from a qualitative synthesis of the methodological and practical issues

found in our corpus of articles. First, we conducted a vertical analysis to extract the structure of the methodological part of each paper. Second, we met and compared our views, adopting a horizontal approach for the papers. Thanks to this transversal reading, we identified recurrences and regularities in the methodological and practical issues of the EVS papers. Third, we read each paper individually to see if our general structure was coherent with the elements present in our corpus of papers and make some minor adaptations. Overall, Figure 1 and the discussion later synthetically present the different steps in the experimental validation of a survey question, as it is most commonly executed in this emergent literature. Of course, in some cases, the names of the steps might differ, as some authors do not follow every step in the same order or use the same name.

The first step is to define the purpose of the research. In fact, different research purposes may bring researchers to resort to the experimental validation of a survey question, such as testing the validity of an existing and already widely used survey question or producing and testing several new questions and comparing their validity in order to select one for large-scale implementation. The concept to be measured has to be clearly and properly defined and distinguished from other related concepts in order to avoid confusion. Then, researchers have to identify the experiment and the questions which will be used to measure the construct. As the experiment is used to produce measures that will be considered as the reference for validation, it has to be a tried and tested experiment, with results whose robustness is unchallenged. The question used may be an existing question or an *ad hoc* question developed for specific research purposes. Last, we need to assess to what extent the two constructs, experiments and survey questions, are comparable through statistical analyses. If the survey measurement appears to be highly correlated with or predictive of the experimental measurement, the survey question is considered validated; otherwise, it is not, and an iterative process may begin, going back to the question identification stage and requiring reformulation.

However, at each of these steps, one may encounter difficulties and have to make methodological choices that will impact the final results. The main methodological issues in the experimental validation of survey questions are the recall effect, the choice of the subject pool, the order effect, and the sample size.[5] The issue of the recall effect arises when associating an experiment with a survey questionnaire that aims at measuring the same preference or cognitive bias. Since questions are direct and explicit (e.g., asking people to rate their agreement with the statement 'I like taking risks'), people may understand the purpose of the subsequent experiment and deliberately manipulate their answers. Such explicit framing is likely to raise response biases, in particular, social desirability and acquiescence biases. Thus, when combining an experiment with a question, there may be an influencing effect (recall effect) between the experiment and question. To control for the recall effect, one may choose among four possible solutions. The first is to have the experiment and question separated in time (see, e.g., Vischer et al., 2013 with a time interval of 2 years). A second solution is to design a 'between' experiment, which consists of changing subjects from the experiment session to the survey session in order to avoid a mutual influence effect between treatments. However, this requires controlling for external variables, such as age, gender, etc., unless one is working with a very large sample, which is considered representative of a population (Johnson & Mislin, 2012). This solution is implicitly used in most studies, for which researchers do not effectively manage the entire experimental validation process (in most cases, they validate a survey originally administered by a third party, such as WVS or SOEP surveys). A third solution that is only usable when studying several cognitive biases or preferences consists of combining questions and experiments on different preferences into the same session, with each session consisting of a question and an experiment that are not related to the same preferences (Falk et al., 2016). Finally, a fourth solution is to include many questions on different themes in the survey, so that the participants do not make the connection between the experiment and the objective of the questionnaire (Dohmen et al., 2011).

Another methodological issue in the experimental validation process is the order effect. The order effect arises when applying different treatments to the same pool of subjects. Subjects' behavior in the last treatment may be influenced by the first treatment, resulting in a lack of independence between the results. Such an issue emerges in the experimental validation process, since we apply two 'treatments' to the subjects (experiment and questionnaire) that may interact and bias the results. To control for the order effect, there are two possible solutions. The first method consists of adopting a *between* design using two distinct subject pools, with one for each of the experimental validation stages, the survey and the experiment. Implementing this method requires having two samples that are large enough to be considered representative of the whole population and thus are both similar or controlling for variables such as age, gender, etc. (see, e.g., Johnson & Mislin, 2012; Vischer et al., 2013). A second way to control the order effect is to adopt a *within* design and apply a counterbalancing technique that consists of reversing the order of the experimental and survey elicitation of preferences for half of the subjects. Half of the participants start with the experiment and then complete the survey, whereas the other half start with the survey and then participate in the experiment. If

[5] Only practical issues specific to the experimental validation of survey questions are addressed here. Methodological issues common to classical experimental approaches are outside the scope of this discussion.

no difference is found in the final results between the two types of sessions, the order effect can be ruled out (see Falk et al., 2016 for an example).

A further methodological issue relates to the choice of sample subjects between a standard or specific population. When studying a specific population, in our case, entrepreneurs or managers, one might question the use of a standard population (in most cases, students) for the experimental validation of a survey question. While using a standard population has several advantages (ease of recruitment, ease of incentive, etc.), it alters the external validity. Some scholars call for using a pool of subjects from the population targeted for the survey to enhance external validity of the EVS, since results may differ among populations (Dohmen et al., 2011; Vischer et al., 2013). As targeting a specific population of managers or entrepreneurs might be difficult, one could take advantage of the development of eLancing for experimental validation for nonstudent participants.[6] Overall, most EVS studies use standard subjects, who are students, and assume that the type of subject will not impact the comparison between survey-produced and experimentally produced data, provided that they stem from the same individual. Regarding this, Falk et al. (2016, p. 17) argued that "while the distributions of preferences may differ for students and non students, there is no particular reason to think that the correlation structure should differ".

The last methodological issue pertains to the optimal sample size, which raises two issues. First, the sample size depends on the experimental design. More specifically, it depends on the number of cells of the experiment, which is determined by the number of treatments. In the case of the experimental validation of a survey question, treatments are related to the controls for recall and order effects. For example, if you control for the order effect by inverting the order between the experiment and survey questions, then the experimental design includes two cells. Second, there is the issue of the optimal subsample by cell. The literature on this issue is strikingly consistent, and most studies uniformly distribute at least 30 subjects into each cell (List, Sadoff, & Wagner, 2011). The EVS literature reviewed in this paper generally relies on samples that include 50–100 subjects per cell. However, relying on exceedingly large samples for experimental designs might be very costly. List et al. (2011) provide a more precise method, by which to calculate the optimal cell sample size, taking into account the structure of the experiment and the required significance and power.

The last step in the experimental validation process consists of assessing to what extent the two constructs, the experiment and survey questions, are comparable. Different methods can be used to investigate whether the survey measurement can predict the actual behavior in the incentive-compatible experiment. Indeed, if it does, this justifies the use of the survey measure as a relevant proxy for the experimental construct in future surveys.[7] In our review, we have identified three methods: descriptive methodologies, measures of predictive validity, and tests of out-of-sample validity.

First, descriptive methodologies rely on assessing the consistency of measurements. To do so, the researcher studies the significance of correlations between experimental and survey constructs by looking at whether the signs are going in the expected directions and whether the extent of the correlation across measures represents a meaningful pattern (Ding et al., 2010; Falk et al., 2016; Vieider et al., 2015). Alternatively or complementarily, some authors rely on the comparison of the distributions of the survey and experimental construct and on statistical assessments of distribution differences – for example, the Kolmogorov–Smirnov test (Ding et al., 2010; Vieider et al., 2015; Vischer et al., 2013).

Second, it is possible to compute measures of predictive validity. One measure is the mean square error (MSE) (Chang et al., 2009). The MSE is the mean of the squared difference between the reference value (experiment result) and the predictive value (survey results). The coupled experiment-survey question with the lowest MSE is deemed to have the best predictive performance. Another way to assess the predictive validity is to rely on regression analysis. With the latter method, the explained variable is the experimental measure of the construct, and the explicative variable is the survey measure. Then, after running a regression, we focus on the regression coefficients to assess the predictive validity of the survey measure. More specifically, we assess the survey question's predictive validity by looking at the significance of the coefficients and at whether signs point to the expected direction. The advantage of this more complex method is that it offers the possibility of introducing control variables, thus excluding the possibility of the result being affected by unobserved heterogeneity (Dohmen et al., 2011; Hardeweg et al., 2013; Johnson & Mislin, 2012; Vischer et al., 2013). Moreover, it allows for classifying candidate survey questions according to their predictive validity (Falk et al., 2016).

Finally, it is possible to test the predictive validity by estimating the out-of-sample validity. This can be done using two samples. The first sample is used to estimate a model of the predictive power of the explicative setup (survey question). Then, the predictive measurements are computed for the

[6] However, one of the main limitations of eLancing is the selection issue. Indeed, in the case of the experimental validation of survey questions targeted toward management research, it might be difficult, if not impossible, to be sure that the eLancers are actual managers. In the case of entrepreneurs, this might be less of an issue.

[7] In an experimental validation of a survey question, the survey and the experiment are conducted simultaneously; thus, the same sample is used. However, once the survey questions are experimentally validated, the survey questions can be implemented on a larger sample.

other sample and compared to the actual measurements. Stated differently, the authors use the subjects' survey responses to predict their choices in the experiment (based on the regression model previously estimated based on the first sample) and then regress the actual choices onto the predicted choices. If the survey reliably captures the preferences of individuals in this second sample, one would expect the intercept of the regression of the actual choices onto predicted choices to be zero and the coefficient of the predicted value to be one; thus, one must test for these hypotheses (Falk et al., 2016).

Discussion and conclusion

This paper has presented the innovative EVS methodology, which relies on the implementation of survey questions previously validated by a controlled experiment. First, the EVS ensures the survey questions' internal validity. Second, its implementation on the relevant population in a naturalistic environment ensures the external validity and multilevel data collection.

The EVS is of potential interest for researchers in management, particularly those interested in the behavioral and cognitive microfoundations of management. More specifically, Phan and Wright (2018, p. 179) underline "that cognition and behavior are at the core of management research. Research at the individual, organization, and system levels of analysis ultimately starts from theories of why and how individuals make decisions to compete or cooperate to achieve their goals". To investigate these questions, it is necessary to adopt a multilevel analysis and combine individual-level variables and firm-outcome variables within the same data collection process. The EVS offers a response to several empirical methodological challenges posed by the use of standard methodologies, which are surveys or experiments, to explore preferences (Aguinis & Lawal, 2012; Bird & Schjoedt, 2009; Bird et al., 2012; Chandler & Lyon, 2001; Charness, 2010; Fehr et al., 2002; Harrison & List, 2004; Hisrich et al., 2007; Zikmund et al., 2013). With the EVS, confidence regarding the causality (i.e., internal validity) is ensured by the experimental validation, while the generalizability and multilevel data collection are guaranteed by the large-scale implementation of the survey, ensuring sample representativeness. This is a distinguishing feature of the EVS compared to other validation techniques used in management. Indeed, these validation techniques rely on the use of complementary analyses that mostly add external validity to the existing measurement instrument (through knowledge on the context, the use of a first sample of subjects, etc.). However, these complementary analyses add less internal validity than laboratory experiments. For instance, marketing researchers often rely on Churchill's paradigm (Churchill, 1979). This validation technique is based on a confirmatory factor analysis to observe how the model works outside of the sample. Another alternative is the mixed method, which consists of combining quantitative and qualitative methods (Tashakkori & Teddlie, 2003). Indeed, the implementation of qualitative approaches allows for a better understanding of the context in which the respondents make decisions and is accordingly conducive to a better design of the quantitative questionnaires by identifying appropriate, precise, and valid variables and measuring instruments (Molina-Azorin, Lopez-Gamero, Pereira-Moliner, & Pertusa-Ortega, 2012).

The EVS appears to be a promising methodology that allows for testing whether the theoretical behavioral and cognitive drivers proposed by the literature to explain firm performances are correct. A specific issue that can be addressed thanks to the EVS is the 'how?' question of the decision process. Psychological research on judgment and decision-making has largely suggested that only a minority of individuals actually structure their decision processes according to the normative suggestions of utility theory (Goldstein & Hogarth, 1997; Kahneman, 2003; Kahneman, Slovic, & Tversky, 1982; Simon, 1955, 1979). Indeed, the way in which information is ordered, framed, and organized considerably impacts the final decision (Hogarth, 1987; McNeil, Pauker, Sox, & Tversky, 1982). Research on entrepreneurial cognition suggests that this is even more pronounced for entrepreneurs (Allinson, Chell, & Hayes, 2000; Busenitz, 1999; Busenitz & Barney, 1997; Mitchell et al., 2002, 2007; Shepherd, Williams, & Patzelt, 2015). Thus, the EVS can help us understand how managerial decisions are made, given that it allows for empirical exploration of how information affecting a decision is gathered, framed, and organized at the individual level and how this affects organizational decisions and outcomes. Furthermore, the EVS can facilitate managerial applications of research, given that testing whether we have the correct theory by which to explain a phenomenon is a prerequisite to potential intervention in the organization. Finally, the EVS has a high potential to facilitate the replication and comparison of results, since the ultimate aim of reviewed papers on the EVS was precisely to develop 'ready-to-use' questions designed to be suitable for rapid and easy replication by the research community, without questioning the robustness of the results (Falk et al., 2016). An interesting potential research avenue would be to integrate experimentally validated questions in international surveys such as the World Value Survey. This would allow us to investigate the intercultural differences of several populations or to implement the survey on a large representative sample of the target population.

Overall, the EVS appears to be a promising methodology for management researchers. But what remains to be done? At this point in time, the literature in experimental economics has already developed the EVS for three categories of preferences – risk aversion, time preferences, and trust – which can be used by the research community as ready-to-use questions.

Falk et al. (2016) produce what they call an experimentally validated 'survey module', measuring six different types of preferences: risk aversion, time preferences, trust, positive reciprocity, negative reciprocity, and altruism. For instance, researchers can use the validated self-assessment questions proposed by Vischer et al. (2013) to investigate the link between firm performance and the time preferences of managers, giving new insights into the issue of myopic management (Mizik, 2010; Stein, 1988, 1989). Further, the questions validated by Johnson and Mislin (2012) allow for exploring how trust affects firms' financial decisions, which can be of great interest in research on family business financial management. To the extent of our knowledge, only one article in the management field has explicitly used, in a survey, a question previously validated by an experiment. In their work, Caliendo, Fossen, and Kritikos (2009) employ the direct question on risk assessment validated by Dohmen et al. (2005) to measure risk aversion in a representative population sample to study its presumed influence on self-employment. They justified their choice precisely on the grounds that the question was previously validated and that it captured the very construct that they were going to measure.

However, in managerial decision-making, other cognitive factors, such as overconfidence, availability bias, escalation of commitment, preference for skewness, and self-serving attribution, are widely cited. Thus, further research is needed in order to either validate existing questions using experimental designs or build and validate a direct question instead of an experiment for wider implementation purposes. To do so, researchers in management can leverage the literature in behavioral economics and psychology, which has yielded plenty of tried-and-tested lab experiments. Once the questions are experimentally validated using the procedure presented in the 'Experimental validation of a survey question: a practical guide' section, it will be possible to implement the survey on a specific population and to make the links between these cognitive factors such as firm performance. For instance, Moore and Healy (2008) propose a controlled experiment on the three forms of overconfidence that could be used to experimentally validate direct questions measuring overconfidence. Integrating these EVS questions on overconfidence into a survey would allow researchers to explore issues such as the link between innovation and overconfidence. This question has already been explored (Galasso & Simcoe, 2011; Chen, Ho, & Ho, 2014) but with an indirect measurement of overconfidence (stock option exercise).

Although we are convinced that the EVS method is a very promising avenue in managerial research, it suffers from some limitations. First, the EVS method assumes that experimentally elicited preferences will be closer to subjects' real behaviors and thus can be considered a reference for evaluating the reliability of survey-produced data. However, why not rely directly on observational data to test for validity? In the empirical literature on bias and decision-making, some studies relate survey questions with real-world data (Chang et al., 2009; Coppola, 2014; Hainmueller et al., 2015). This is an alternative method to the EVS for validating survey questions. This real-world-based validation method is particularly useful when trying to validate a behavior or preference measurement instrument. However, real-world data are difficult to collect, and sometimes some behaviors of interest might be unobservable. In this case, researchers need to choose between experimentally revealed preferences and survey-stated preferences to proxy for real-world behavior. Take, for instance, overconfidence. It is a preference that needs to be revealed. You cannot directly observe overconfidence, you can only observe the consequences of overconfidence. Second, another limitation lies in the fact that experimental techniques are often implemented on student samples, meaning that the external validity of experiments for nonstudent samples could be undermined. This raises the question of whether to conduct the underlying experiment on the EVS target population. According to Falk et al. (2016), the module will be behaviorally relevant for nonstudents, as long as the correlations between survey items and experiments are similar to those in the student sample. While the distributions of preferences may differ for students and nonstudents, there is no particular reason to think that the correlation structure should differ. Finally, the EVS might be difficult to implement on topics for which there are no tried-and-tested experiments. Indeed, the experimental economics community's validation of the experimental design used in the experimental validation of survey questions ensures the EVS's internal validity. Therefore, interesting managerial topics, such as the preference for independence and against external investors typically displayed by family firms, which have been largely pointed out in business history literature (Douglas & Shepherd, 2000; James, 2006), cannot be readily explored through EVS techniques because, to date, there is no recognized experimental design for this issue. Thus, further research in the EVS scope should also encompass more traditional experimental economics research, aiming at developing tried-and-tested experiments on specific managerial topics.

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M@n@gement

ORIGINAL RESEARCH ARTICLE

A Holistic Approach to Incubator Strategies in the Entrepreneurial Support Ecosystem

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Abstract

This research employs ecosystem and strategic fit theories to understand incubators' relationships with other ecosystem actors by investigating the elaboration of specialization, diversification, and co-opetition strategies. In the entrepreneurial support ecosystem, incubators act as intermediaries, bridging the gap between tenants and their external environment. These strategically led organizations offer a unique perspective for exploring the strategic fit differentiation engine through a holistic approach. A qualitative study reviews 48 semi-structured interviews derived from five case studies of the main incubator types. The results show that incubators differentiate themselves by employing various combinations of individual and collective strategies consisting of individual, organizational, and environmental factors to achieve ecosystem benefits. These findings provide a cross-level understanding of the entrepreneurial support ecosystem for all ecosystem actors and enable the implementation of appropriate generic strategies.

Keywords: *Ecosystem; Entrepreneurial support; Business incubators; Co-opetition; Strategy*

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Ecosystem research is an emerging but underdeveloped theoretical stream that requires additional scientific investigation as it has become the 'latest conceptual fad' (Brown & Mason, 2017; Jacobides, Cennamo, & Gawer, 2018; Spigel & Harrison, 2018). The current lack of knowledge regarding this issue constitutes a major gap in entrepreneurship research (Thomas & Autio, 2014). Indeed, "the ecosystem-based views of entrepreneurship reflect a dynamic and socially complex aspect of action and interaction in the entrepreneurial process" (Goswami, Mitchell, & Bhagavatula, 2018, p. 119). Reflecting this dynamic and complex view, ecosystem actors struggle to elaborate efficient strategies in the entrepreneurial context (Adner, 2017). Furthermore, this dynamic is related to ecosystem resilience, which enables a better understanding of why some ecosystems thrive (Bernard & Barbosa, 2016; Roundy, Brockman, & Bradshaw, 2017).

To overcome the complexity of the entrepreneurial ecosystem, early research has mainly focused on its definition and composition (Kœnig, 2012; Spigel, 2017). The entrepreneurial ecosystem is a 'multi-actor' and 'multi-scalar' phenomenon describing "a set of interconnected entrepreneurial actors, institutions and entrepreneurial processes, which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment" (Mason & Brown, 2014, p. 5). Entrepreneurial ecosystem scholars have shifted their focus to explore the strategic dynamics, processes, evolution, and interdependencies of the ecosystem components as they investigate strategies for collaboration and competition (Adner, 2017; Goswami et al., 2018; Kœnig, 2012; Spigel & Harrison, 2018). To assimilate these interactions and their contributions to ecosystem outcomes, clarifying the importance of each actor for the effective functioning of the overall system is fundamental (Morris, Neumeyer, & Kuratko, 2015; Stangler & Bell-Masterson, 2015).

Early research demonstrated that incubators and accelerators occupy a central position in the entrepreneurial support ecosystem (Clarysse, Wright, Bruneel, & Mahajan, 2014; Goswami et al., 2018; Klofsten, Lundmark, Wennberg, & Bank, 2020; Pauwels, Clarysse, Wright, & Van Hove, 2016; Rubin, Aas, & Stead, 2015; van Weele et al., 2018) by bridging the gap between tenants and their external environment (Bergek & Norrman, 2008). This 'umbrella' concept is used to describe strategically led organizations that foster a supportive and safe environment for creating and developing new firms during their early life stages (Aernoudt, 2004; Bergek & Norrman, 2008; Chan & Lau, 2005; Chandra & Fealey, 2009).

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However, incubators have different goals related to their strategic positioning and uneven quality or efficiency (Aernoudt, 2004; Pena, 2004; Somsuk & Laosirihongthong, 2014; Tamasy, 2007). The important public funding dedicated to incubators increases concerns regarding their efficiency, evaluation process, and outcomes (Bergek & Norrman, 2008). Accordingly, incubators are challenged with finding a balance between "opportunity-seeking (entrepreneurship) and advantage-seeking (strategic management) behaviors" (Shankar & Shepherd, 2019, p. 2). In this ever-changing context characterized by increasing competition between incubators and other ecosystem actors, an emerging research field has focused on incubators' strategic positioning (Baraldi & Havenvid, 2016). Nonetheless, this field has primarily focused on individual strategies of specialization, diversification, and/or service-based differentiation (Schwartz & Hornych, 2008, 2010, 2012; Vanderstraeten & Matthyssens, 2012) while neglecting collective strategies involving cooperation and competition with other ecosystem actors. Hybrid strategies, such as co-opetition, may provide an important contribution to the sustainability of the entrepreneurial support ecosystem. Co-opetition refers to the combination of two strategic behaviors (cooperation and competition) that are *a priori* opposed to one another (Akdoğan & Cingšz, 2012; Bengtsson & Kock, 1999, 2000; Dagnino, Le Roy, & Yami, 2007; Robert, Chiambaretto, Mira, & Le Roy, 2018; Yami, Castaldo, Dagnino, & Roy, 2010; Yami, Chappert, & Mione, 2015).

By combining these scientific discussions, this study aims to explore incubators' strategic fit (individual and collective strategies) as a driver of differentiation within the entrepreneurial support ecosystem. Similarly, incubators offer a unique perspective for exploring the strategic fit differentiation engine in a holistic manner. Specifically, this research aims to answer the following research question: *How do incubators ideally elaborate internal and external strategic fit as a differentiation engine within the entrepreneurial support ecosystem?* To address this question, a qualitative methodology was adopted based on five case studies and 48 semi-structured interviews conducted with diverse ecosystem actors.

This paper is structured as follows: (1) a literature review of ecosystem and strategic fit theory adapted to the incubator context, (2) a description of the qualitative methodology used for the data collection and analysis in this study, (3) a presentation of the results discussing the within-case, cross-case, and cross-level findings, and (4) a conclusion summarizing the results, the paper's contributions, and limitations and recommendations for related future research.

A strategic approach to the entrepreneurial support ecosystem

A successful entrepreneurial support ecosystem requires fostering connections with various heterogeneous actors and networks (Chandra & Fealey, 2009). However, such heterogeneity increases the complexity of the ecosystem, particularly due to incubator diversity (Theodoraki & Messeghem, 2017). To better understand the composition of the entrepreneurial support ecosystem, different types of incubators and their services should first be described.

The diversity of incubators and service offerings

The multitude of incubator types and diversity of service offerings amplify the complexity of the entrepreneurial support ecosystem (Bøllingtoft, 2012; Messeghem, Bakkali, Sammut, & Swalhi, 2018). The first source of this complexity involves multiple types of incubators differentiated based on their strategic goals, funders, value creation, incubation phases, and target markets (Aernoudt, 2004; Barbero, Casillas, Ramos, & Guitar, 2012; Carayannis & von Zedtwitz, 2005; Grimaldi & Grandi, 2005; McAdam & Marlow, 2008; Rubin et al., 2015; von Zedtwitz & Grimaldi, 2006). Furthermore, new hybrid models combining several characteristics, such as geography (urban, suburban, and rural), sponsorship (universities, governments, economic development entities, and corporations), and industry (ICT: Information and Communications Technology, agriculture, and biotechnology), have emerged (Al-Mubaraki & Busler, 2010). Based on the available criteria, incubators can be sorted into the following five categories: economic development incubators, technology incubators, university incubators, social incubators, and private incubators. Some authors refer to other types of incubators, such as virtual incubators (Carayannis & von Zedtwitz, 2005), bottom-up incubators (Bøllingtoft, 2012), network incubators (Bøllingtoft & Ulhøi, 2005), and mixed and cooperative incubators (Etzkowitz, de Mello, & Almeida, 2005). While acknowledging the validity of these types of incubators and different categorization schemes, this study focuses on the five categories delineated earlier. Specifically, economic development incubators are used to enhance regional economic development and employment (von Zedtwitz & Grimaldi, 2006). Technology incubators attempt to foster the emergence of technology-based firms (Barbero et al., 2012). University incubators facilitate knowledge and technology transfers in addition to providing access to academic networks (Grimaldi & Grandi, 2005). Social incubators focus on social integration and innovation (Aernoudt, 2004). Private incubators are for-profit organizations and, therefore, are mainly interested in firms that generate short- and/or middle-term profits (Carayannis & von Zedtwitz, 2005).

The second source of complexity associated with incubators involves the variety of service offerings. Several authors highlight the need to combine multiple services during the incubation process to satisfy tenants (Aernoudt, 2004; Bergek & Norrman, 2008; Bøllingtoft, 2012; Bøllingtoft & Ulhøi, 2005; Carayannis & von Zedtwitz, 2005; Chan & Lau, 2005; Clarysse, Wright, Lockett, Van de Velde, & Vohora, 2005; von Zedtwitz & Grimaldi, 2006). Carayannis and von Zedtwitz (2005) categorize these services into the following five main categories: access to physical resources, office support, financial resources, entrepreneurial support, and networks. The first type of service relies on hosting and providing physical facilities (offices, furniture, and workout facilities) to tenants. The second type is associated with providing logistical infrastructure and office services (secretarial and reception services, printing, mail delivery, wi-fi, and fax machines). The third type involves access to financial resources, such as angel investors, venture capitalists, public grants, and loans. The fourth type is associated with business coaching regarding management, accounting, financing, and legal and fiscal aspects. The final type provides access to a solid network, which is a key factor in the creation and development of new firms (Bøllingtoft, 2012).

However, an incubator may be unable to offer all services essential for successful incubation, which may consequently lead to the development of cooperative behaviors among ecosystem actors who complement one another. In contrast, the diversity of actors and evolution of the ecosystem drive incubators to develop strategies to obtain competitive advantages and survive, particularly service-based differentiation strategies (Bonel & Rocco, 2007; Vanderstraeten & Matthyssens, 2012). This differentiation engine can be further explored through the strategic fit framework.

Incubators' strategic fit in the entrepreneurial support ecosystem

The notion of strategic fit is the basis of contingency theory (Drazin & Van de Ven, 1985; Ginsberg, Horwitch, Mahapatra, & Singh, 2010; Ginsberg & Venkatraman, 1985; Kim, Lee, & Park, 2015; Van de Ven & Drazin, 1984; Venkatraman & Camillus, 1984). According to Miller (1992), strategic fit is differentiated as internal or external fit. Internal fit is based on the principle of congruence between a firm's strategy and its organizational characteristics. External fit addresses a firm's external environment, including the alignment between its strategy and environment. Although contingency theory considers alignment between strategy and environment necessary for achieving superior performance, it does not impose 'one best way' to achieve this goal, which is also known as 'equifinality' (Doty, Glick, & Huber, 1993; Gresov & Drazin, 1997; Payne, 2006). Similarly, strategic fit enables an analysis of the strategic behaviors of support entities within the entrepreneurial ecosystem (Shankar & Shepherd, 2019). Moreover, this framework is suitable for exploring generic strategies aiming to link internal and/or external organizational characteristics to identify 'ideal' strategies for each type of incubator (Schwartz & Hornych, 2012; Vanderstraeten & Matthyssens, 2012). The evolution of these characteristics may affect an incubator's strategic positioning by leading to 'misfit' or inadequate internal and external fit (Miller, 1992).

Additionally, the literature has focused on incubator efficiency and outcomes over an extended period without demonstrating a shared empirical consensus (Baraldi & Havenvid, 2016; Barbero et al., 2012; Messeghem et al., 2018). Some studies tend to recommend solutions to increase incubators' value creation. Tamasy (2007) argues that incubators should aim to become private entities with no reliance on public funding. Other studies recommend that incubators should develop their overall strategy according to the characteristics and specificities of the environment in which they operate (Bank, Fichter, & Klofsten, 2017; Baraldi & Havenvid, 2016; McAdam, Miller, & McAdam, 2016; Schwartz & Hornych, 2012) while adapting their business models to create and capture value from the ecosystem (Demil, Lecocq, & Warnier, 2018). This study follows this recommendation to explore strategic incubator practices within the entrepreneurial support ecosystem in a holistic manner; thus, internal fit is explained in terms of the discrete strategies of specialization and diversification, while external fit is discussed in terms of collective strategies, including cooperation/competition (co-opetition) strategies.

Individual strategies: Specialization or diversification?

The early literature distinguishes between specialized business incubators (SBIs) and diversified business incubators based on their strategic objectives (Schwartz & Hornych, 2008, 2010, 2012; Vanderstraeten & Matthyssens, 2012). The specialization strategy focuses on an industry with the goal of offering services and knowledge in a specific sector and providing specialized equipment that could ultimately improve the perceptions of tenants. SBIs select tenants only from a specific industry (or complementary sectors). Nevertheless, although specialization fosters the development of in-depth knowledge regarding an industry segment, it can also lead to a negative work atmosphere, implementation of barriers between tenants, and mistrust regarding sharing information related to the specificity of the sector (Schwartz & Hornych, 2008, 2010). In contrast, the diversification strategy widens the strategic scope in all industry sectors. However, this expansion may lead to competition between an incubator and other ecosystem actors or partners

who may eventually become co-opetitors (Vanderstraeten & Matthyssens, 2012).

To reduce competition, some authors recommend concentrating on specialized services and limiting the number of targeted sectors; however, these authors do not empirically show that specialization outperforms diversification as a strategy (Aerts, Matthyssens, & Vandenbempt, 2007; Grimaldi & Grandi, 2005; Klofsten et al., 2020; Schwartz & Hornych, 2008, 2010). According to Payne, Kennedy, and Davis (2009), the specialization strategy improves the performance of firms operating in a competitive environment characterized by resource availability and intense interfirm rivalry. Specialization strategy defenders contend that this type of strategy increases incubators' perceived service value among tenants (Schwartz & Hornych, 2008). Additionally, specialized services focusing on an industry or technology (e.g., media-related services, specialized infrastructure, advanced equipment, or sector-specific knowledge and advice) cannot be easily replicated by other ecosystem actors (Schwartz & Hornych, 2008). Thus, the specialization strategy decreases competition among ecosystem actors.

Defenders of mixed approaches argue that the coexistence of diversified and specialized actors within an ecosystem is a key factor enabling value creation and collective benefits and/or performance (Demil et al., 2018; Jacobides et al., 2018; Kapoor, 2013). However, the diversification strategy can also result in a competitive advantage. Thus, diversified incubators may help generate a competitive advantage by providing operational services and engaging in specific studies focusing on marketing and internationalization for tenants in a wide variety of industry sectors (Vanderstraeten & Matthyssens, 2012). Although the incubator selects the internal strategic positioning of specialization or diversification, it should develop a parallel co-opetition strategy with other ecosystem actors (Baraldi & Havenvid, 2016). Co-opetitive behaviors among ecosystem actors are more beneficial than applying the cooperation or competition strategy separately because the benefits of both strategies can be reaped simultaneously (Bengtsson & Kock, 1999; Ritala, Hallikas, & Sissonen, 2008).

Collective strategies: Co-opetition in the entrepreneurial support ecosystem

The co-opetition strategy is present in all industries but emerges more regularly in complex and dynamic environments and service-based industries (Bengtsson, Eriksson, & Wincent, 2010; Carayannis & Alexander, 1999). In these environments, knowledge acquisition is important for gaining competitive advantages (Robert et al., 2018). Furthermore, the heterogeneity of unique resources and resource munificence can lead to co-opetitive behaviors (Bengtsson & Kock, 2000; Carayannis & Alexander, 1999; Huang & Chu, 2015; Padula & Dagnino, 2007). Co-opetition is defined as a complex phenomenon, involving both horizontal and vertical relationships with heterogeneous actors (Chiambaretto & Dumez, 2016), thus forming a system of interactions based on partially congruent interests and objectives (Dagnino et al., 2007). Within the entrepreneurial support ecosystem, two complementary definitions can be identified. First, incubators may foster collaborative ties with different types of actors, such as policy makers (funders), tenants (users), and other incubators (competitors) (Baraldi & Havenvid, 2016; Bengtsson & Johansson, 2014; Brandenburger & Nalebuff, 1995). Second, incubators may develop activity-based co-opetition, in which they compete for access to public funding while cooperating for access to the skills of other ecosystem actors (Baraldi & Havenvid, 2016; Bengtsson & Kock, 2000; Carayannis & Alexander, 1999; Lair, 2013) (see Figure 1).

Finally, the entrepreneurial support ecosystem is a dynamic and highly complex environment, in which a large volume of information and knowledge must be mastered (Carayannis & Alexander, 1999). Incubators join networks, create synergies, and participate in resource transfers to support new firms. However, the high level of heterogeneity cannot sustain synergy without complementarity (Huang & Chu, 2015; Thomas & Autio, 2014), and this complementarity is based not only on the functional characteristics of each actor but also on their obligations to other ecosystem actors. In addition, interactor complementarity and interdependence are driven by competitive and cooperative dynamics (Bengtsson et al., 2010; Bonel, Pellizzari, & Rocco, 2008; Bonel & Rocco, 2007). Thus, complementarity is related to a cumulative dimension of the value added by each actor (Jacobides et al., 2018; Thomas & Autio, 2014) and is enhanced by reducing duplication in the core capabilities of the ecosystem actors. Accordingly, this framework leads to the following fundamental question: *How do incubators ideally elaborate internal (specialization and diversification) and external (cooperation and competition) strategic fit as an engine of differentiation within the entrepreneurial support ecosystem?*

Methods

Research settings

This study is based on an interpretative, systematic, inductive qualitative research protocol designed as a multiple-case study, enabling a comparative analysis of the data and reinforcing the process of generalizing results (Eisenhardt & Graebner, 2007; Gioia, Corley, & Hamilton, 2013; Yin, 2018). This method is suitable for studying phenomena that have been underexplored in the previous literature (Bansal & Corley, 2012; Chetty, Partanen, Rasmussen, & Servais, 2014; Goswami et al., 2018). This study

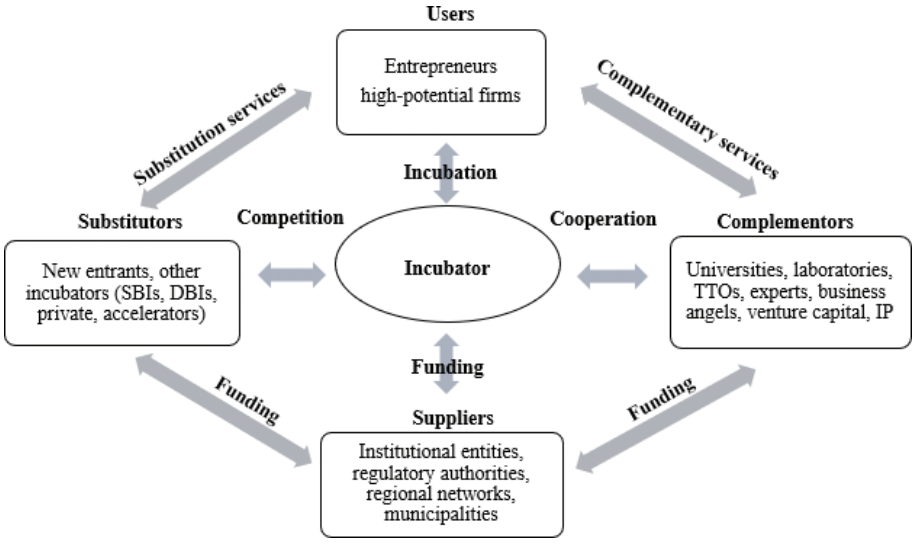

Figure 1. Entrepreneurial support ecosystem (adapted from Brandenburger and Nalebuff, 1995)

was conducted in the south of France, which is characterized as a dynamic regional entrepreneurial ecosystem that contains all elements necessary to explore this framework. Cohen (2006) explains that an entrepreneurial ecosystem should contain several categories of entrepreneurial actors (incubators, support experts, research, and funding entities) surrounded by an entrepreneurial culture (based on success stories and talent pools).

Moreover, this study relies on an ecosystem approach based on semi-structured interviews. The ecosystem approach is suitable for (1) conceptualizing the relationships among ecosystem actors, (2) interpreting the complexities in these relationships that can evolve over time, and (3) examining these strategic relationships using systemic logic (Ben Letaifa & Rabeau, 2013). This approach differs from linear approaches, which are generally not suitable for an ecosystem reading. By employing this methodology, this study aims to cover multiple actors in the entrepreneurial support ecosystem and cross data to increase the reliability of the research (Chetty et al., 2014; Minà, Dagnino, & Ben Letaifa, 2015). Additionally, incubators play a key intermediary role in the regional entrepreneurial ecosystem and allow the application of a multiple-level construct in which incubators act at the meso level (intermediaries), tenants are situated at the microlevel, and the regional entrepreneurial ecosystem represents the macro level (Goswami et al., 2018). Thus, this study focused on the interfirm level (i.e., incubators are the research object) to achieve a better understanding of the collective strategies within the entrepreneurial ecosystem (Gnyawali, Madhavan, He, & Bengtsson, 2016; Mariani, 2016).

Data collection

The data collection is based on incubators' typologies based on the literature review. Five case studies were selected based on their purpose, task, competitive focus, incubation time, and services, as shown in Table 1.

The purposive, theoretical sampling of different groups of actors provided an optimal description of the entrepreneurial support ecosystem. Additionally, snowball sampling was performed to reach theoretical saturation (Aguinis & Solarino, 2019). In total, 16 incubator managers, 11 incubator staff members, 6 tenants, 3 institutional officials, 3 network coordinators, 4 funders, and 5 research entities were interviewed. This methodological approach distinguishes two levels of analysis, including the incubator level (core actors) and the ecosystem level (peripheral actors). According to Ben Letaifa (2013), core actors are actors closely linked to the heart of a business, such as staff, users, and suppliers. Furthermore, peripheral actors may be involved in the entrepreneurial support ecosystem and affect its structure and evolution.

The replication design enabled the accumulation of knowledge regarding each case through multiple inter-site experiments involving 23 different incubators. This approach allows several experiments to be conducted within each case and increases the generalizability of the results (Yin, 2018). The research design is based on 48 semi-structured interviews (36 core actor interviewees and 12 peripheral actor interviewees). The interviews include a total of approximately 66 h of audio recordings and were conducted between June 2013 and November 2014. The interviews were conducted face to face

Table 1. Sample characteristics

	Case A: economic development incubators	Case B: technology incubators	Case C: university incubators	Case D: social incubators	Case E: private incubators
Purpose	Not-for-profit	Not-for-profit	Not-for-profit	Not-for-profit	For-profit
Task	Develop the regional economy	Create and sustain high-potential tech firms	Promote academic entrepreneurship and develop and commercialize academic research	Create and maintain high-potential social-focused firms	Accelerate firm creation and development
Competitive focus	Specific location (local or regional)	Industry or sector (Internet and ICT)	Academic spin-offs	Cooperatives and start-ups from the social solidarity economy	Start-ups mainly related to ICT
Incubation phase	Before and after creation	Mainly after creation	Mainly before creation	Mainly before creation	Before and after creation
Incubation time	Medium/long	Medium/long	Short/medium	Medium/long	Short
Range of services	Mixed services	Technology-based services	Research-oriented services	Mixed services	Mixed services

using an interview guide covering the following three topics: (1) the incubator's organizational characteristics (internal fit, service offering, specificities, and differentiation), (2) the ecosystem's characteristics (external fit, interaction with other actors, and types of relationships), and (3) the ecosystem's benefits (value creation, efficiency, and the impact of ecosystem relationships on performance).

To guarantee the validity and reliability of the findings, multiple sources of evidence were proactively collected as a means of triangulating information (Gibbert, Ruigrok, & Wicki, 2008). The data include both primary data (from semi-structured interviews with various ecosystem actors) and secondary archival data (from site visits, websites, brochures, annual reports, press releases, and e-mails) (see Table 2). The researcher first crafted and validated the interview guide with other researchers and experts while striving to maintain a neutral point of view while conducting the interviews. Interobserver reliability was assessed across the study's multiple respondents. The researcher also carried out two pilot interviews with an incubator manager and an incubator staff member to confirm the appeal of the research question and ensure that the questions in the interview guide were clear to the informants. Their feedback confirmed the importance of the research question, prompted minor changes to the interview guide, and prepared the researcher to conduct the interviews.

Data analysis

Regarding data processing, a content analysis is frequently used to examine the differences among strategic groups in the field of strategic management (Short, Payne, & Ketchen, 2008). More precisely, a thematic analysis using Nvivo12 software (QSR International) was performed in three stages (Bazeley & Jackson, 2013). First, 114 codes were created using an explorative open coding that allowed the identification of emerging ideas regarding the representative quotes. These first-order concepts show the informants' voice and are formulated with similar terms in small phrases or labels. Second, some codes were deleted, some codes were created, and other codes were simply grouped. Sets of gathered quotes from each group were created using the Matrix Query Wizard for cross tabulations of the content encoding. This axial coding enabled comparisons across the different responses given by the informants and related the concepts to each other to establish themes. The second-order themes show the researcher's voice and interpretation of the informants' terms. Third, comparisons of the existing literature and coded data revealed the aggregate dimensions, as shown in Figure 2. During this stage, the relationships between the first-order concepts and second-order themes were examined to reveal the more general dimensions of the modeling process. This final stage enabled the transformation of the static data structure into a dynamic understanding of the interrelationships among the concepts. Furthermore, the Gioia methodology was used to achieve qualitative rigor in the analysis and interpretation of the results (Gioia et al., 2013). To ensure the quality of the encoding process, the data were coded twice with an interval of a few months to ensure the objectivity of the researcher. Moreover, to minimize bias, the researcher requested the opinions of experts not involved in the study regarding the data analysis process, coding themes, and result interpretation. These regular meetings provided an outsider's view of the research design and findings (Corley & Gioia, 2004). Finally, this modeling was presented to key informants in the regional entrepreneurial ecosystem to achieve rigor, increase its trustworthiness, and ensure construct validity (Gibbert et al., 2008).

Table 2. Description of the collected qualitative data

	Organization level (incubator)					Ecosystem level			Total
	Case A: economic development incubators	Case B: technology incubators	Case C: university incubators	Case D: social incubators	Case E: private incubators	Institutional bodies	Research entities	Funding entities	
Number of incubators	10	3	3	3	4	–	–	–	23
Number of interviewed actors	13	4	9	6	4	3	5	4	48
Duration of interviews (HH:MM)	16:41	05:33	13:07	08:38	06:58	04:14	05:21	05:24	65:56
Total number of transcribed pages	325	108	204	117	80	84	82	111	1,111 pages
Total number of verbatim quotes coded	1,440	460	1,000	268	667	480	368	225	4,908 verbatim quotes coded
Total amount of secondary data	139 pages + 04:58 of various meetings	43 pages + 03:49 of various meetings	314 pages + 00:59 of various meetings	176 pages + 02:23 of various meetings	–	–	–	–	672 pages + 12:09 of group meetings

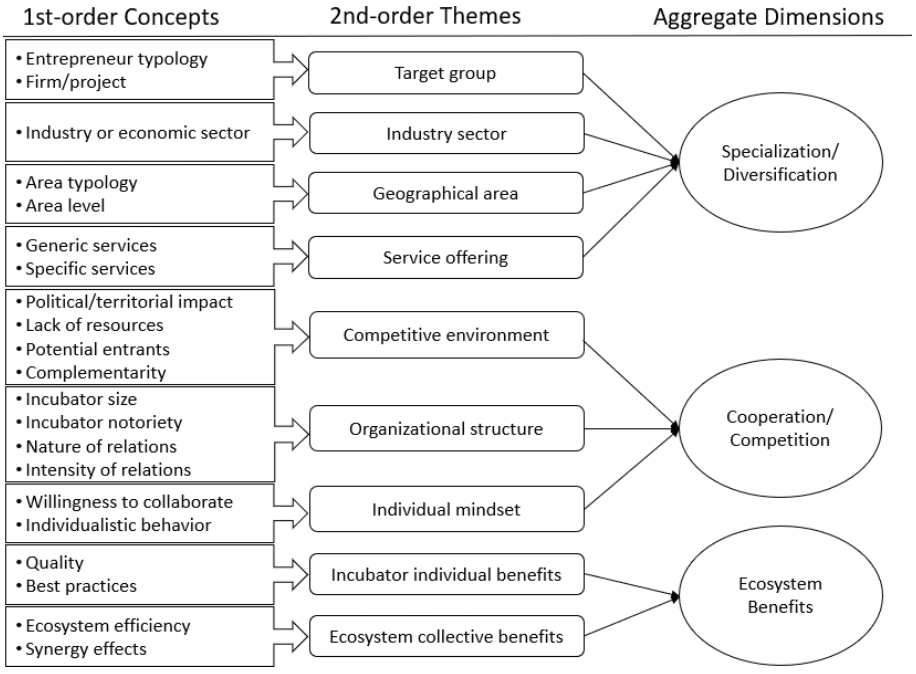

Figure 2. Data structure

Within-case, cross-case, and cross-level findings

The analysis of the results (see Appendix) intended to facilitate a better understanding of the entrepreneurial support ecosystem and identify the internal and external strategic fit driving incubator differentiation that may lead to better individual and/or collective benefits. This section adopts a cross-level lens to understand (1) how incubators elaborate internal

Table 3. Incubators' differentiation criteria by individual strategies

	Case A: economic development incubators	Case B: technology incubators	Case C: university incubators	Case D: social incubators	Case E: private incubators
By target group	SMEs, micro-projects, craftsman, unemployed	Innovative projects	Researchers, PhD students, doctors, engineers, project leaders from laboratories	Natural, legal, or social entrepreneurs, cooperatives, communities, inter-cities, countries	Natural or legal entrepreneurs, businesses, communities, inter-cities, countries
By industry sector	Craftsmanship, specific sectors (cosmetics, agronomy, agriculture, tourism, etc.)	Digital, technology, health sciences, engineers	Related to nearby laboratories (material sciences, digital, biology, health, chemistry, etc.)	Social solidarity economy (handicapped, human services, health related)	All sectors, public and private
By geographical area	• Rural/urban • Regional/departmental/ local	• Mainly urban • International/national/ regional/departmental	• Mainly urban • National/regional	• Mainly urban • National/regional	• Rural/urban • International/national/ regional/departmental
By service offering	A range of generic services (operational services, networking, training)	A range of specific services (services related to technology, networking, training)	A range of specific services (services related to technology, networking)	A range of generic services (operational services, networking, training)	A range of generic and/or specific services

and external strategic fit as a differentiation engine and (2) how incubators' differentiation engine contributes to elaborating an ideal strategic fit within the entrepreneurial support ecosystem.

Incubators' differentiation by individual strategies

Under the theoretical framework presented earlier, the individual differentiation strategies mobilized by incubators consist of specialization or diversification. The main criterion used to distinguish these generic strategies is the choice of centralizing in one or more industry sectors. Thus, the following results reveal the complementary criteria of incubators' differentiation, that is, the target group, industry sector, geographical area, and service offerings (see Table 3).

To minimize the lack of visibility and clarify the role of each actor in the entrepreneurial support ecosystem, different types of incubators may focus on one or more user groups. For example, economic development incubators mainly focus on small and medium-sized enterprises, micro-projects, craftsmen, or people aiming to become employed by starting their own businesses. However, this category is directly related to the choice of industry sector. Furthermore, each type of incubator can be differentiated based on its geographical area at two levels, that is, (1) rural or urban and (2) local, departmental, regional, national, or international. For example, economic development incubators may be found in both rural and urban settings. However, their vocation is often limited to the local or departmental level, and they often have federal representatives at the regional level as is the case with the chambers of commerce. In contrast, technology incubators frequently occur at all geographic levels – even at the international level – and involve and promote high-potential technology-based firms worldwide. The final category of differentiation criteria is service offerings. Each incubator type offers a range of generic or specific services related to the needs of its tenants. These categories can be fulfilled using the temporal criteria of differentiation related to the incubation phase, that is, before or after a firm's creation. Incubators may also differentiate by the duration of the incubation program (see Table 1). For example, university incubators are mainly positioned prior to firm creation as they focus on the maturation and incubation of an idea until a firm is created. Therefore, their incubation process is shorter than that typical of economic development incubators (18 months versus 3–5 years, respectively).

Proposition 1: The target group, industry sector, geographical area, and service offerings related to the incubator phase and duration contribute to shaping the internal strategic fit differentiation within the entrepreneurial support ecosystem.

Incubators' differentiation by collective strategies

Collective strategies are framed in the following three categories: competitive environment, organizational structure, and individual mindset. The first category relies on the scalability of incubators' external environment, which imposes a competitive repositioning of actors that ensures their place in the ecosystem, especially as incubators multiply. In the French context, most incubators are closely linked to local policy makers. Consequently, their objectives are frequently related to the goals of the political party that they represent. In parallel, the instability of financial resources increases the competitive spirit among ecosystem actors to acquire or maintain the largest

piece of the 'cake' and ensure their sustainability. Similarly, competitors and potential new entrants strengthen the competition among ecosystem actors. A network coordinator stated the following: "In fact, the public authorities have created a new support entity that did not exist before, which has created a certain form of competition, and then, there is also competition regarding budgets" (NC#1). Nonetheless, their complementarity provides a sort of equilibrium that frames the entrepreneurial support ecosystem.

The second category includes incubators' organizational structure. Competition may occur among incubators of the same or similar sizes and is particularly notable among large incubators in their effort to attract high-potential firms. However, small incubators may feel powerless compared to larger incubators and, thus, attempt to minimize the sense of competition among them. "Competition remains for large incubators that have projects with potential. People who develop their project here, they do not care; they just want to develop their project. So, it is not the typology [of tenants] that we have in small incubators. It is less competitive. If we can attract one project like that every two or three years, that is not what is going to put us in competition with them [the large incubators]" (IM#Case_A#6). Additionally, incubators are locked in a continuous struggle to improve their notoriety and become more visible than other ecosystem actors. However, incubators frequently co-support tenants to maximize the value added. "We never provide support alone because at this stage, the support, which I would describe as economic, is largely as important as technological support. It is important to have support throughout the business plan, and that is not our job at all. So, we are going to co-support the technological dimension of the project. We will provide insight to the project adviser, who is often a generalist" (IM#Case_B#1). Moreover, the lack of resources, skills, time, or staff leads ecosystem actors to collaborate by subcontracting certain services. Ecosystem actors develop formal and informal relationships among themselves to meet the needs of high-potential firms. Thus, frequent meetings and the proximity of actors help develop strong ties among incubators.

The third category frames the level of the individual mindset based on incubator managers' perceptions. Competitive perceptions frequently arise from individualistic behaviors related to decreasing public funding. A network coordinator admits the following: "I am going to try to use a budget that the other one had since money is now scarce" (NC#1). Similarly, certain actors develop user ownership practices to meet the quantitative criteria imposed by their funders. However, other actors use public funds to offer free services and compete with actors who charge for such services or private incubators. A network coordinator argues that some incubator managers use commercial arguments to attract tenants as follows: "If you come to my incubator, space facilities are free" (NC#2). However, even when competitive strategies manifest within the entrepreneurial support ecosystem, actors often simultaneously implement cooperative strategies. Most respondents acknowledge that they are willing to collaborate according to the directives of policy makers who support collaborative approaches among ecosystem actors. A policy maker affirms the following: "I think that incubators are looking for contact. During the plenary sessions of the regional innovation network, we feel that there is a desire and willingness to collaborate, to exchange and share" (INS#1).

Proposition 2: The competitive environment, organizational structure, and individual mindset contribute to shaping the external strategic fit differentiation within the entrepreneurial support ecosystem.

Cross-level strategic fit differentiation engine model

Cross-level strategic fit differentiation engine

The evidence from the cases indicates that the differentiation strategic fit varies based on environmental specificities, incubator types, and individual perceptions (see Figure 3). Regarding environmental specificities, the informants confirmed that policy makers are highly concerned with improving the image of their territory based on rare specialized services and industry focus. "In fact, we are indeed one of the first and one of the few regions to have set up a service dedicated to the social and solidarity economy within its business development department. Additionally, the other innovation is that we are the only region, or at least the first there too, that has set up an incubator" (INS#1). Furthermore, recent evolutions and trends favor differentiation efforts through the emergence of new niches of specific target groups. "The recent fact is that student entrepreneurship was not given much attention until two years ago. That is really emerging. There is strong motivation, pressure and significant resources allocated at the national level by the state to promote student entrepreneurship in eligible institutions" (IM#Case_C#4). Similarly, environmental changes related to potential new entrants, competitors or the evolution of financial resources disrupt the equilibrium and lead to a strategic misfit. "Each regional ecosystem is specific. There may be state-led programs that are well articulated, complete the system and integrate well. On the other hand, the same programs in other regions will make a mess because there are already people who have positioned themselves on this, which puts them in competition. This can destabilize the ecosystem, that is for sure" (IM#Case_B#1).

Strategic fit is also related to organizational characteristics based on the target of companies or the focus on specific industries aiming to provide local economic development

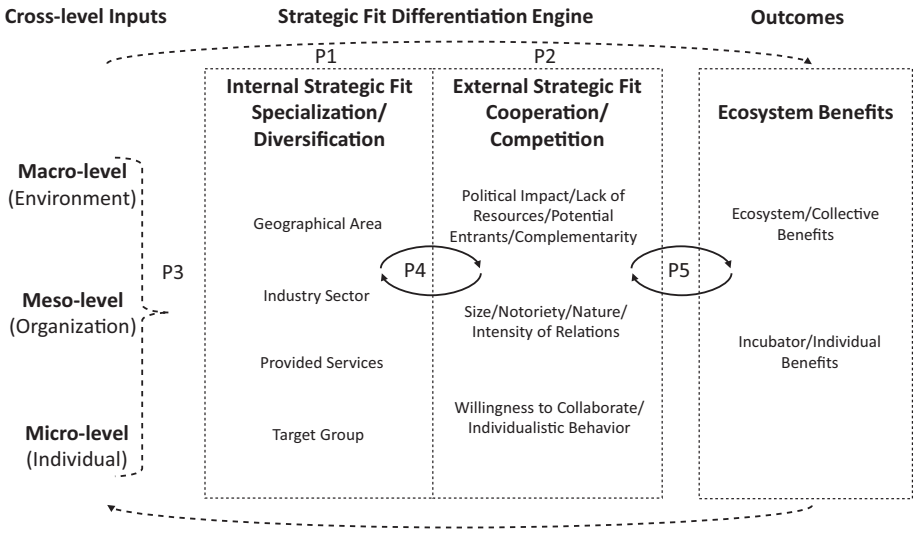

Figure 3. Cross-level strategic fit differentiation engine model

through innovation and employment. "We are an incubator for innovative companies through several support processes that range from project incubation in a pre-incubator to hosting a company in the incubator and now accelerating mature companies in an accelerator. The whole strategy of our incubator is to develop the territory through innovation" (IM#Case_A#5). In addition, some incubators face competition by users, which is particularly related to their specific group target of high-potential firms. Such entrepreneurs know their abilities and do not hesitate to meet various incubators to rank the value added by each of their proposals. This behavior is reinforced because most incubators prefer to attract such tenants to improve their notoriety. "Several times, we had project leaders that were in contact with us and had also met several other incubators. Then, they had to choose one of these incubators. So, they [the incubators] were in fact in competition with each other. They all tried to attract them" (IS#Case_C#1). However, in most cases, individuals appreciate cooperation due to their common values. "I think it really depends on the individuals. Martin [IM#Case_A#11, rural incubator] is a lovely person, and he is honest too; if we have to say something to each other, we are going to say it. We avoid being in unhealthy competition" (IM#Case_A#6, rural incubator).

Proposition 3: The environmental specificities, organization characteristics, and individual perceptions contribute to shaping the ideal strategic fit within the entrepreneurial support ecosystem.

Strategic fit differentiation engine interactions

The internal and external strategic fit are interconnected and interdependent in shaping the incubator strategic positioning in the entrepreneurial support ecosystem. Key informants stated that the target or industry focus, service offerings, and focus on a geographical area may influence co-opetition. An incubator staff member testified the following: "It is the same job, but after that, we all have our specificities. Here, we only support projects related to a lab" (IS#Case_C#1). However, cross-level competition could be fostered by the evolution of the ecosystem. An incubator manager confirmed the following: "Competition is enhanced from two things: territories and proximity - being next door and doing the same thing. The less we do the same thing, the less we are in competition. Typically, if tomorrow there is another incubator that opens but will provide support for a market segment or a sector of activity in which we are not involved, then it is not going to be a problem for us as we will not be competitors at all. On the other hand, we do cosmetics. If an incubator that provides support for cosmetics opens tomorrow, then yes, we will indeed be competitors" (IS_Case_A#9). Thus, increasing specialization decreases competition in a healthy ecosystem with low individualistic behaviors. "If I am a social economy incubator, I will attract projects that are in the social and solidarity economy. If I am an art-specialist incubator, I will attract projects that are specialized in art. If I am a sport-specialist incubator, I will attract projects that are specialized in tourism or sports. There is competition, yes, but there are also sometimes niches" (RE#2).

In contrast, outsourcing activities foster cooperation among ecosystem actors who offer services when incubators cannot provide such services alone. "There are a lot of services that we provide that are outsourced. I told you about the hosting. We do not have offices to accommodate project leaders; in fact, they are hosted within research organizations or universities that have set up offices or workshops for incubated

projects because they are members of our association and have, therefore, made the decision to set up a hosting offer" (IS#Case_C#1).

Proposition 4: The internal and external strategic fit contribute to shaping the ideal strategic fit within the entrepreneurial support ecosystem.

The strategic fit differentiation engine's outcomes

Our findings highlight that the strategic fit differentiation engine influences individual and collective benefits. Ecosystem commitment is necessary for providing high-quality services and preserving the incubator image. An incubator staff member explains the following: "I think that we cannot live separately from the network. Well, we can; it is not vital, but the support will not be of good quality" (IS#Case_A#9). This ecosystem perspective acts as a stimulator for improvement. An incubator staff member claims the following: "When you have incubators that work faster than you that develop better, you also tend to move. These market principles with several players and competition ultimately lead to improvement in proposals in terms of offers" (IS#Case_A#1). Similarly, complementarity and synergy are key to the success of the ecosystem by increasing the ecosystem's efficiency. An incubator staff member considered the following: "When you have better relationships with your ecosystem, you are necessarily more efficient" (IS#Case_A#7).

To achieve efficiency, individual and collective interests must be balanced by intelligent cooperation among ecosystem actors. "Of course, we have our own service offer, but we also developed our ability to work in good understanding with everyone without promoting individual development" (IM#Case_B#1). "There is still a real collaborative intelligence. In other words, I think that there must indeed be some form of competition and a willingness to do better than the other, but not in the sense of putting obstacles in the way. I think that there is this intelligence that we are all working in the same direction" (IM#Case_E#2).

In addition, the lack of resources, organization disparities, and incubator manager perceptions amplify the interdependencies of individual and collective benefits. "I cannot perform on my own. I am very intelligent and efficient, yes, but not for all companies, all situations, or all sectors of activity; it is not possible. We have to be in a network and be in contact with each other because otherwise, it will not work" (IM#Case_A#6). Thus, to maintain the benefits, actors must efficiently live together, and ecosystem actors must respect and serve the same goal. "This is a very healthy competition. Today, incubators manage to live together and collaborate because we know each other anyway, and we are following the same qualitative logic. We are not following a quantitative logic where we force people to create their own businesses to get results by saying that we have so many new businesses. Our objective is to maintain quality and to ensure that the actors work in this relationship and respect this objective" (IS#Case_A#1).

Proposition 5: An ideal strategic fit differentiation engine driven by environmental, organizational, and individual specificities contributes to enhance both incubator and ecosystem benefits within the entrepreneurial support ecosystem, which, in turn, contribute to evolve the strategic fit differentiation engine.

Discussion and conclusion

Differentiation strategies within the entrepreneurial support ecosystem

Previous studies show that incubators differentiate through internal strategic fit using specialization or diversification strategies (Schwartz & Hornych, 2008, 2010, 2012; Vanderstraeten & Matthyssens, 2012). However, internal fit is not sufficient for selecting the ideal incubator strategy, which should instead be adjusted based on environmental and cultural features (Adner, 2017; Schwartz & Hornych, 2012; Spigel, 2017; Theodoraki, Messeghem, & Rice, 2018; Vanderstraeten & Matthyssens, 2012). Similarly, ecosystem actors should find a balance between serving an entrepreneurial goal and seeking competitive advantages (Shankar & Shepherd, 2019). Overall, the results suggest that differentiation is reinforced by (1) environmental factors as public funding decreases and the competitive market becomes more intense with the multiplication of the number of actors, (2) organizational factors based on incubator notoriety and ecosystem actors' relationship management, and (3) individual factors related to co-opetition behaviors.

An analysis of the entrepreneurial support ecosystem shows that many actors compete by operating with a market logic to attract their customers. Moreover, changes in the economic environment, both institutional and regulatory, affect co-opetitive behaviors (Padula & Dagnino, 2007). Indeed, in times of crisis or periods characterized by intense economic rivalry, incubators may move away from their main goals to survive. In addition, the increasing number of actors and the lack of clarity regarding strategic objectives and tasks can lead to indistinct offers of support and increased competition among actors. Another element enhancing competition among actors in terms of entrepreneurial support involves the decreasing financial resources that the actors must share. The International Business Innovation Association (InBIA) reports that incubators compete for limited public funds and must regularly demonstrate that their existence significantly affects the entrepreneurial support ecosystem to their funders and governments (Lair, 2013). To gain a

competitive advantage over other actors, incubators highlight their seniority and experience (historical legitimacy), their mission and the value added for tenants (organizational legitimacy), and their fame and reputation (symbolic legitimacy).

Finally, the findings propose a cross-level differentiation model for shaping ideal strategies and suggest that each type of incubator should employ different combinations of internal and external strategic fit based on incubator's organizational characteristics, its manager's perceptions, and environmental specificities. For example, a rural economic development incubator may establish a diversification strategy with a focus on cooperation as the talent pool is limited, while a technology incubator may promote a specialization strategy with a focus on competition to attract high potential firms that will increase incubator's performance. Therefore, incubators' equifinality allows the selection of different strategies to gain benefits and create additional value in the entrepreneurial support ecosystem (Doty et al., 1993; Jacobides et al., 2018). Thus, seemingly important directions for future research are the identification of ideal strategies to increase performance based on each ecosystem actor's strategic focus (Vanderstraeten & Matthyssens, 2012) and the creative business model thinking, which shows several paths that can lead to superior performance (Demil et al., 2018).

Implications and contributions

This research introduces a co-opetition strategy to the entrepreneurial support field and provides a holistic view of incubators' differentiation within the entrepreneurial support ecosystem (Schwartz & Hornych, 2012; Vanderstraeten & Matthyssens, 2012). Basically, this study responds to the research gaps identified by incubator strategy scholars and considers incubators' environmental characteristics (Baraldi & Havenvid, 2016; Schwartz & Hornych, 2008, 2010, 2012; Vanderstraeten & Matthyssens, 2012). This paper also contributes to theory regarding co-opetition by integrating co-opetition into the context of incubators and adding empirical work in other contexts as recommended in the previous literature (Bonel & Rocco, 2007; Dagnino et al., 2007; Gnyawali & Charleton, 2018; Padula & Dagnino, 2007; Yami et al., 2010). Thus, this study sheds light on co-opetition mechanisms that may lead to beneficial outcomes (Gnyawali & Charleton, 2018). The present paper provides empirical evidence for ecosystem theory in the context of incubators by conducting a meso-level analysis (incubators and other ecosystem actors), which exceeds the intra-incubator level (cooperation and competition between tenants) (Clarysse et al., 2014; Rubin et al., 2015; Schwartz & Hornych, 2010). Additionally, this study adopts an ecosystem approach that crosses the visions of the main actors involved in the entrepreneurial support ecosystem (Ben Letaifa, 2013).

This study also presents managerial implications for all ecosystem actors by providing important insight into incubators. Specifically, incubators should implement strategies as integral part of the ecosystem rather than as singular independent strategically led organizations. For this purpose, the cross-level strategic fit differentiation engine model may be used as a tool to guide ideal strategic fit elaboration and implementation, specifically for incubator managers and policy makers. Incubator managers may use the ecosystem to represent their environment and adopt appropriate generic strategies that can enable them to gain a competitive advantage and improve their efficiency. Policy makers can encourage incubators to engage in co-opetitive strategies to optimize resources and reduce duplication among actors, thereby reinforcing the consistency of entrepreneurial support channels. Furthermore, hybrid strategies, such as co-opetition, may increase individual and collective benefits while strengthening local economic development. Finally, this cross-level strategic fit differentiation engine model offers a multi-dimensional perspective and can be used as a communication tool among incubator managers, policy makers, and other ecosystem actors to collectively engage in a coherent territorial strategy.

Research limitations and future perspectives

Despite the interests of this study, certain limitations mainly involving the qualitative methodology used must be addressed. This study focuses on a single French region, indicating that the generalizability of these results is limited. Additionally, this study is based on a small number of interviews per incubator type. Another limitation may be the typologies of the studied incubators. This study selected five types of incubators based on their strategic focuses. Thus, other typologies based on the incubation phase, that is, preincubation, incubation, and acceleration, may be interesting to investigate in future research. This process-based approach applied to incubators' strategic fit differentiation could foster a deeper understanding of the entrepreneurial support ecosystem, its evolution, and its resilience (Bernard & Barbosa, 2016; Goswami et al., 2018; Roundy et al., 2017; Shankar & Shepherd, 2019; Spigel & Harrison, 2018). Methodology recommendations include comparative studies in other regions to confirm or amend the present findings. Further investigation is required to examine the congruence between internal and external fit and incubator performance. Accordingly, future studies may explore which combination of individual (specialization or diversification) and/or collective (co-opetition) strategies facilitate superior performance. Some authors contend that specialization may lead to better performance (Kapoor, 2013; Schwartz & Hornych, 2008), whereas other scholars consider

that a combination of strategies should be consistent with the external environment (Bank et al., 2017; McAdam et al., 2016; Schwartz & Hornych, 2012) and the organization's business model (Demil et al., 2018). Performing a quantitative study of incubator strategies is also important to test these preliminary results on a larger scale. While encouraged by this study's findings, which consider incubators (1) as strategically led organizations, (2) operating in interaction with ecosystem actors and (3) implementing strategies within the entrepreneurial support ecosystem, such research has not been performed to date and could offer new perspectives for entrepreneurial ecosystems research.

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Appendix

M@n@gement

ORIGINAL RESEARCH ARTICLE

Plural Governance for the Management of Local Public Services: An Empirical Investigation on the French Car Park Industry

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Abstract

This paper investigates the use of plural governance for the provision of local public services. Most of the studies conducted on local data compare direct public provision (i.e., in-house provision where governments produce public services themselves, using their own equipment and employees) to contracting out. But governments actually face a more complex set of choices than the simple make-or-buy dichotomy. In particular, cities can simultaneously opt for the 'make' and 'buy' alternatives for the provision of the same public service, and thus produce a portion of the service themselves while contracting with external (public or private) companies. We show how contractual perspectives and the resource-based view of the firm help to understand the rationales behind plural sourcing. Organizations appear to be able to adopt this governance structure to enhance efficiency since it enables them to employ benchmarking strategies. However, authors in public management insist on the specificities of public sector contracting, and our analysis also includes political measures, such as the number of changes of political affiliation at the head of cities. Our empirical analysis examines data about car park management by 97 municipalities in 2010. We use a multinomial logit to compare three distinct alternatives: total internal provision, complete externalization, and plural sourcing. Our results clearly indicate that plural sourcing is a strategic choice that is adopted by municipalities to reduce the cost of service delivery when they suffer from high levels of fiscal stress. Plural governance does not result from the alternation of political parties in power, indicating that political factors do not play a significant role in explaining that sourcing decision.

Keywords: *Plural sourcing; Concurrent sourcing; Public services; Governance choices; Local data*

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Public procurement, the process by which governments purchase goods and services from the private sector, is a key economic activity and has a direct impact on citizens' welfare. In 2017, public procurement accounted for 29.1% of total government expenditure (i.e., almost 12% of GDP) in OECD[1] economies. If this share is relatively stable over time,[2] the financial crisis of 2008 has urged governments to increase the efficiency and effectiveness of this key function (OECD, 2019), as it determines to a large extent the quality and price of public services. Moreover, the decentralization process has amplified the role played by subcentral governments, which make up 63% of overall public procurement spending (OECD, 2019).

In France, this portion has doubled since 1950, and recent legislation has again strengthened the powers of local governments: in 2015, the NOTRe law[3] reinforced the powers of regions and intercommunal structures, and created a specific agency to regulate and monitor the management of local public services.[4] The study of local procurement is thus of primary importance.

This paper aims to examine a specific way of delivering public services: plural governance. Plural sourcing can be observed when a city simultaneously uses internal provision and outsourcing for apparently identical transactions. Plural governance further implies that a specific governance structure is adopted: internal and external provision of services are combined to increase the efficiency of service delivery. Studies conducted in private contexts have shown that private firms use plural governance to improve efficiency (Heide, Kumar, &

1. Organisation for Economic Co-operation and Development.
2. In 2007, public procurement accounted for 30.2% of total expenditure.
3. Loi sur la Nouvelle Organisation Territoriale de la République.
4. Observatoire des finances et de la gestion publique locales.

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Wathne, 2014; Parmigiani, 2007; Puranam, Gulati, & Bhattacharya, 2013), since it enables them to employ benchmarking strategies and to have better control over the opportunism of suppliers. Plural governance should therefore be considered as a distinct governance choice rather than an intermediate position on a make-or-buy continuum (Parmigiani, 2007). Some evidence of plural governance for public services has existed since the seminal work of Miranda and Lerner (1995), but the rationales behind plural strategies for public services remain understudied.

We conduct an empirical investigation of the rationales behind make-and-buy choices for public service delivery. More specifically, we investigate which city characteristics influence the likelihood of plural governance being used for a particular public service. Our analysis is based on a contractual perspective and is enriched by a resource-based view, both of which have mostly been developed in private settings. But the specificities of the public sector must be taken into account when studying public services (Rainey, 2009). Since public organizations operate in political environments, our analysis includes variables reflecting the political affiliation of elected officials. We formulate three hypotheses. First, we believe that since plural governance is adopted to enhance the efficiency of public service delivery (Brown & Potoski, 2003), it should be adopted by cities that suffer from high levels of fiscal stress. Second, since plural governance is considered to be a complex management system (Warner & Hefetz, 2008), it can only be handled by cities that have sufficient capabilities. Finally, plural sourcing can result from the alternation of political parties holding power in a city, since left-wing mayors prefer in-house provision for public services (Picazo-Tadeo, González-Gómez, Wanden-Berghe, & Ruiz-Villaverde, 2012), while right-wing administrations tend to favor externalization (Gradus, Dijkgraaf, & Wassenaar, 2014).

We use data for the French car park sector for our analysis: we analyze sourcing decisions for car park services in 97 cities in 2010. The car park sector is particularly relevant for studying plural governance because of the high degree of standardization of its infrastructure. The relevance and specificities of the sector are discussed in a dedicated subsection. Two samples are constructed in order to conduct both transaction- and city-level analyses. We use a multinomial logit to compare total internal provision, complete externalization, and plural sourcing.

Our results clearly indicate that plural governance is a distinct governance structure (rather than an intermediate alternative on a make-or-buy continuum), which may be preferred to total outsourcing and total in-house provision. Plural governance is adopted by both rich and indebted cities, indicating that it is used as a strategy for reducing the costs of service delivery by cities that have sufficient capabilities. This governance structure does not result from the alternation of political parties in charge of the city, indicating that the combination of internal and external provision is intentional and does not result from specific decisions taken by mayors of opposing political affiliations.

The 'Theory and hypotheses' section discusses the previous literature to build three hypotheses. The 'Sector and data' section presents the sector and the data. The 'Study of make-or-buy choices: Transaction-level sample' section contains preliminary transaction-level analysis of make-or-buy choices for car parks. As this first analysis does not enable us to study plural governance, the 'Study of plural governance: City-level sample' section proposes an analysis at the city level. Finally, the 'Conclusion, limitations, and future research' section concludes and identifies the main limitations of our analysis in order to propose avenues for future research.

Theory and hypotheses

In this theoretical section, we draw insights from contractual perspectives, which have mostly been conducted in private settings, and we highlight the specificities of the behavior of local governments. Strategic management scholars have recently shown a growing interest in public issues (Cabral, Mahoney, McGahan, & Potoski, 2019; Quelin, Kivleniece, & Lazzarini, 2017), as they recognize the complexity of interactions between public and private agents. They have adopted transaction cost and incomplete contract theories enriched with capability considerations to study public services and public–private interactions (Cabral, Lazzarini & De Azevedo, 2013; Quelin, Cabral, Lazzarini, & Kivleniece, 2019). The analysis of public actors' behavior and of public–private interactions can greatly benefit from the theoretical insights of the strategic management literature (Cabral, 2017). Fruitful studies have been conducted in private contexts to understand why plural governance is used, and they are of considerable importance in understanding this type of governance structure as a strategic behavior. However, local governments, and public actors more generally, have their own specificities and cannot be studied as private actors (Boyne, 2002). The aim of this section is therefore to build upon contractual perspectives with resource and political considerations in order to understand the strategic behavior of public entities, without ignoring their specificities.

Plural governance: Definition and theoretical perspectives

Plural sourcing can be defined as the simultaneous use of in-house provision and outsourcing for identical transactions. This make-and-buy choice has been seen in various contexts: in the franchising context, where franchisors decide to own some outlets while contracting with independent franchisees for

others (Bradach & Eccles, 1989); in private firms in various sectors, such as small manufacturing firms (Parmigiani, 2007) or industrial companies (Heide, 2003), where firms simultaneously use market contracting and vertical integration for the same transaction; and in public settings, where cities mix in-house provision and outsourcing to deliver public services (Miranda & Lerner, 1995; Warner & Hefetz, 2008).

This make-and-buy solution can appear puzzling from a make-or-buy perspective (Puranam et al., 2013). Since the seminal work of Coase (1937), the make-or-buy choice has been extensively studied, mostly through the lenses of transaction cost economics (Williamson, 1981, 1985) and the resource-based view of the firm (Barney, 1991; Teece, Pisano & Shuen, 1997). Transaction cost economics posits that the governance structure for a given transaction is chosen with respect to the characteristics of the transaction, most importantly asset specificity and uncertainty, as they determine the relative cost of recourse to the market. The resource-based view of the firm insists on the differences in capabilities between the focal firm and its competitors to explain make-or-buy decisions. Based on these premises, authors have also combined the two approaches to show that firms' capabilities and transaction costs both help to explain outsourcing decisions (Fabrizio, 2012; Silverman, 1999). Even though transaction costs and resource-based approaches have mostly been used to understand the boundaries of firms, these frameworks have also been used to study local government sourcing decisions. Using data on local public services in the United States, Brown and Potoski (2003) show that the probability of relying on in-house provision increases with the level of asset specificity. Similarly, Levin and Tadelis (2010) find that higher levels of contracting difficulties are associated with lower levels of externalization. Porcher (2016) uses French municipal data on the water sector to show that cities are more likely to use internal production when they have high production capabilities.

These theories have proved useful for understanding the make-or-buy decisions of firms and governments, but, at first glance, they do not help with understanding why an agent (i.e., with given capabilities) will simultaneously use externalization and vertical integration for identical transactions (i.e., with given characteristics). But does plural governance even exist? In other words, does plural sourcing really involve the adoption of a specific governance structure? Some authors, including Williamson (1985), have made efforts to show that once the heterogeneity of transactions is correctly measured, firms do not make and buy the same input (He & Nickerson, 2006). Krzeminska, Hoetker and Mellewigt (2013) call for a cautious definition of plural sourcing and warn scholars against a misunderstanding of make-and-buy strategies. They highlight that very similar transactions may not be identical and may actually differ in some characteristics, justifying the use of different governance structures.

The above-mentioned theoretical elements indicate that the inherent levels of asset specificity, uncertainty, and resources in transactions may explain the outsourcing decisions of municipalities. A careful transaction-level analysis should therefore precede any study of plural sourcing. These considerations justify the choice of the sector we analyze in this paper, as demonstrated in the 'Sector and data' section. The 'Study of make-or-buy choices: Transaction-level sample' section presents the results of a transaction-level examination of make-or-buy choices.

Plural governance and fiscal stress

Because of the widespread evidence of plural sourcing (Puranam et al., 2013), many authors have tried to understand the specific rationales behind make-and-buy strategies. In their early study of plural sourcing in franchising contexts, Bradach and Eccles (1989, p. 97) pledge that to understand plural forms, "the analytic focus must move from individual transactions to the broader architecture of control mechanisms." They show that firms may want to make and buy the same transaction because it creates competition between the two mechanisms. This competition leads to reduced transaction costs by establishing backward integration as a credible sanction in the case of opportunistic behavior from the external supplier (Dutta, Bergen, Heide, & John, 1995; Puranam et al., 2013).

Plural governance also helps to solve information asymmetry problems between buyers and suppliers (Heide, 2003; Mayer & Salomon, 2006). By giving information to the focal firm, it enables benchmarking strategies. Kidwell and Nygaard (2011) prove that company-owned units provide franchisors with useful information for benchmarking the performance of independent franchisees. Controlling opportunism by outside suppliers is also central to the analysis of Heide et al. (2014), as they show that monitoring activities are efficient only in the case of plural sourcing, because it gives focal firms valuable information and the opportunity to control external suppliers. On a different but complementary note, Parmigiani (2007) shows that partial externalization can have positive effects on the performance of internal units, as the performance of outside suppliers can be used to benchmark internal production. These findings suggest that plural governance is a distinct governance structure, rather than an intermediate position on the make-or-buy continuum (Parmigiani, 2007). In other words, firms can take advantage of the combination of vertical integration and outsourcing for the same transaction.

Is this also the case for local governments? If plural governance enables costs to decrease, then it should be particularly important for the management of public services. While there is some evidence of plural governance in public settings, it is scarcer. Miranda and Lerner (1995) were the first to study arrangements that combine external delivery and in-house

production for local public services in the United States. They find that these arrangements are cost effective as they are associated with lower levels of expenditure. More recently, Brown and Potoski (2003) and Hefetz, Warner and Vigoda-Gadot (2014) studied plural governance for local public services in the United States, and in multi-service settings. They find that services for which quality is more difficult to measure (Brown & Potoski, 2003), and that are characterized by high levels of asset specificity or greater management difficulties (Hefetz et al., 2014), are more often produced using plural governance. The make-and-buy solution is considered to be profitable as it enables cities to judge the performance and quality of a supplier against their own (Brown & Potoski, 2003).

In their meta-analyses, Bel and Fageda (2009, 2017) indeed show that cities' sourcing decisions reflect their search for economic efficiency, which is particularly true for cities with high levels of fiscal stress. Cities with high debt burdens are more likely to outsource public services in order to cut costs (Levin & Tadelis, 2010), because fiscal stress creates incentives for governments to be more efficient in service production (Brown & Potoski, 2003). This is in line with the findings of the seminal article by Hart, Shleifer and Vishny (1997), who show that contracting out public services leads to cost reductions, even if it is at the expense of service quality. More generally, this idea that externalization leads to lower costs is at the core of the ancient New Public Management approach (Hood, 1991), where governments are encouraged to promote competition and consumer responsiveness in service delivery, and to import management rules from the private sector.

This reasoning can be extended to plural governance. As explained earlier, if plural governance is used in strategies to increase the economic efficiency of public service provision, then it should be adopted by cities with high fiscal stress, which can be measured by the level of local debt (Levin & Taldelis, 2010). We therefore hypothesize:

Hypothesis 1: *The likelihood of adopting plural governance increases with the level of debt.*

Plural governance and capabilities

If managers indeed consider economic efficiency factors into their make-or-buy decisions, capabilities also play a significant role in explaining organizational boundaries (Dumez & Jeunemaître, 2010). Researchers have therefore extended contract theories to integrate capability and resource considerations into the study of the outsourcing decisions of firms and cities. A distinction can be made between production capabilities (which enable low production costs) and contracting capabilities (which enable the low cost of contracting); production capabilities enhance contracting capabilities (Fabrizio, 2012; Mayer & Salomon, 2006). Production capabilities provide the focal firm with useful information that allows contracting costs to be reduced. These contracting costs are due to adverse selection problems (Akerlof, 1978), contract maladaptation, and monitoring difficulties (Mayer & Salomon, 2006). Klein, Mahoney, McGahan, and Pitelis (2013) advocate that the capabilities approach is particularly useful for studying public organizations. Studying the case of a public buyer, Cabral (2017, p. 828) defines contracting-management capabilities as "the abilities to procure goods efficiently in the market in terms of setting up a bid, selecting appropriate suppliers, and negotiating contracts. During the contract execution phase, contract-management capabilities refer to the ability to manage relationships with other suppliers and evaluate contractor behavior in pursuit of the public interest." Internal production can certainly improve these abilities as it gives valuable information to help reduce *ex ante* and *ex post* contracting costs.

However, plural sourcing can also be thought of as a complex management system (Warner & Hefetz, 2008). Using information generated by internal provision to better manage outsourcing contracts requires a sufficient number of qualified public agents. But as underlined by Cabral (2017), public administrations often suffer from constraints such as budget limitations. Plural governance can therefore be handled only by the cities that have the necessary capabilities (Porcher, 2016), in other words large and rich ones (Brown & Potoski, 2003; Warner & Hefetz, 2008). Cities with more professional managers are better able to manage service delivery, and they are more aware of the benefits of plural delivery because they know the importance of market management (Warner & Hefetz, 2008). Following this reasoning, large municipalities are more likely to resort to plural governance, because they have more professional managers. For example, in small cities, a single municipal team usually handles the management of every local public service, while large cities have a team devoted to the management of each public service. Income per capita is also a good measure of cities' capabilities because cities with healthier citizens are more able to raise revenue through taxation. Those cities therefore have more resources, that is revenues and staff, to build capabilities. More specifically, Brown and Potoski (2003) show that cities with high levels of revenue per capita are more likely to invest in contracting-management capacity. The authors identify three components of contracting-management capacity: the capacity to determine whether to make or buy the service; the capacity to bid the contract, select the provider, and negotiate the contract; and the capacity to evaluate the contractor's performance.

In summary, plural governance requires a complex management system, large cities tend to have more professional managers, and rich cities are more likely to invest in contracting-management capabilities. These elements lead to the following hypothesis:

Hypothesis 2: *The likelihood of adopting plural governance increases with population and income per capita.*

Plural governance and political factors

The specificities of the public sector must not be ignored when studying the behavior of public actors. Boyne (2002) contends that the differences between public and private sectors must not be overstated, but he still shows that public organizations suffer from more bureaucracy. Scholars have therefore examined the specificities of public contracting. Spiller (2008) and Moszoro, Spiller and Stolorz (2016) show that public contracting is more rigid than private contracting, because the partners are scrutinized by citizens and potential political competitors. Beuve, Moszoro, and Saussier (2019) further empirically find that the rigidity of public contracts increases with the degree of political competition.

Political factors should therefore not be omitted when studying the outsourcing strategies of local governments. First of all, citizens may not care only about economic outcomes, such as price and quality, when it comes to some public activities (Jia, 2018). Public employees and unions have been shown to have a preference for public provision of local public services (Levin & Tadelis, 2010; Warner & Hebdon, 2001), whereas industrial users and high-income households prefer externalization (Bel & Fageda, 2009; Warner & Hefetz, 2002). While these dimensions are unlikely to explain plural governance directly, empirical investigation must control for the presence of interest groups who are in favor (or against) to the externalization of public services to the private sector.

Moreover, although citizens do not directly participate in make-or-buy choices for public services, their electoral choices may reflect their preferences. Hence, the political affiliation of mayors has been shown to have an influence on their sourcing decisions. In Spain, Picazo-Tadeo et al. (2012) find that left-wing parties reject outsourcing the management of water services to private companies. In Sweden, Sundell and Lapuente (2012) show that center-right governments outsource public services more than other governments. Gradus et al. (2014), using Dutch data, show that a shift to the market in the case of refuse collection is more likely for right-wing governments.

How can plural sourcing result from political factors? Since left-wing cities seem to have a preference for the vertical integration of public services (Picazo-Tadeo et al., 2012) and right-wing parties favor externalization to private firms (Gradus et al., 2014), plural sourcing may result from political changes at the head of the city. Beuve and Le Squeren (2016) show that once right-wing mayors have outsourced some public services, it is very difficult for future left-wing administrations to return them to public provision. Indeed, externalization often involves long-term contracts with private firms that cannot be terminated by future administrations. Moreover, Beuve and Le Squeren (2016) show that governments can lose their ability to manage public services once they have been outsourced to the private sector. They show that a city that has always been governed by left-wing officials is more likely to use in-house provision for a public service, whereas a city that has always had right-wing governments is more likely to completely externalize the service. We therefore hypothesize that the past alternation of political parties in power can lead to plural governance at time *t*. This reasoning leads to the final hypothesis:

Hypothesis 3: *The likelihood of adopting plural governance increases with the number of changes of political affiliation at the head of the city.*

The three hypotheses formulated in this section are empirically tested in 'Study of plural governance: City-level sample' section. In the next section, we describe the sector and data employed.

Sector and data

Local governments and the management of car parks

We use data on the management of car parks, using a sample of French cities of more than 20,000 inhabitants. This sector is particularly appropriate for investigating plural governance for public services for four reasons.

First, the management of car parks fulfills the necessary condition of being a public service, for which cities are responsible. Although cities must retain ownership of the infrastructure for each car park, they can opt for either internal provision or for externalization. Externalization involves agreeing long-term contracts with private firms to build and/or operate car park infrastructure. Nowadays, most car park infrastructures have already been constructed, and contracts usually only involve the management of parking services. In this case, the average length of these operating contracts is 18.2 years (Beuve et al., 2019). However, substantial work is often needed to renovate the infrastructure, and in such cases, the average length of contracts is 30 years (Beuve et al., 2019).

Second, municipalities can outsource the management of car parks when they want to, as there are a high number of potential suppliers. Indeed, the French car park sector is characterized by a growing level of competition between French firms (local operators as well as larger companies) and, more recently, national and foreign operators (Baffray & Gattet, 2009). In 2011, 70% of French car parks were managed through outsourced contracts.[5]

Third, this sector is particularly convenient for conducting transaction-level studies and for identifying cases of plural

[5] Data from the French National Federation of Parking Activities (FNMS).

governance. We define one transaction as one car park infrastructure. For each transaction (i.e., for each car park), a city makes a make-or-buy decision. At the city-level, plural outsourcing happens when some infrastructures are managed by external firms, while others are operated in-house. In contrast, cities opt for complete externalization when each car park is outsourced, and for complete in-house provision when each car park is managed in-house.

Finally, and more importantly, car parks are a very standard type of infrastructure. The management of car parks is a standardized service, and contracting parties are relatively free from any bilateral dependency when a contract expires. Hence, when an outsourcing contract expires, a municipality chooses to renew the contract with the incumbent provider in 60% of cases (Beuve, Le Lannier, & Le Squeren, 2018). This renewal rate is low compared to other sectors such as urban public transport (≈90%) (Amaral, Saussier, & Yvrande-Billon, 2009), or the water sector (≈90%) (Guérin-Schneider & Lorrain, 2003). Brown and Potoski (2003) also find that car park services are among the less specific services provided by United States cities. Of course, the characteristics of the infrastructures can differ across cities: car park infrastructures may be more complex to build and manage in a very dense environment than in a medium-sized city, which justifies different make-or-buy decisions. However, it is difficult to conceive that differences between infrastructures in a given city can justify different choices. This assertion will nonetheless be discussed and empirically investigated in 'Study of make-or-buy choices: Transaction-level sample' section.

Data sources

Our empirical investigation uses data from a survey conducted by CEREMA[6] into the management practices of cities regarding off-street and on-street car parking. The main survey we use reflects the situation on December 31, 2010. The questionnaire was sent to 455 French cities with more than 20,000 inhabitants. At least one question was answered by 196 municipalities, which represents a response rate of about 43%. From this sample, we chose to keep only the answers relating to off-street parking, and eliminate the information about on-street parking, because the characteristics of the management of on-street and off-street parking are likely to differ. In addition, in the final sample, we only kept the cities that administered at least two car parks, as they would otherwise not be able to opt for the plural alternative.

[6] The CEREMA (Centre d'Études et d'expertise sur les Risques, l'Environnement, la Mobilité et l'Aménagement) is a French public administration, which is under the supervision of two ministries: the Ministry of Ecology and Sustainable Development and the Ministry of Transportation.

We used these data to construct two datasets: the first allowed us to conduct transaction-level analyses, and the second city-level analyses. The first sample (one observation per car park) contains 345 observations, representing 83 cities (hereafter referred to as the 'transaction-level sample'). The second dataset ('city-level sample'), with one observation per city, contains 97 observations. The city-level sample contains information about more cities because it uses less information about car park characteristics, and therefore has less missing data. The descriptive statistics from the two samples can be found in Table 1.

In order to construct our set of independent variables, we needed information about the characteristics of the municipalities, which we obtained from the French National Institute of Statistics and Economic Studies (INSEE) and from the Center for Socio-Political Data (CDSP) for the political variables.

The next section presents the variables, empirical strategy, and results of the make-or-buy analysis, conducted at the transaction level.

Study of make-or-buy choices: Transaction-level sample

As explained in the theory section, transaction costs theory and resource-based view of the firm focus on make-or-buy choices for specific transactions. Before aggregating data at the city level to observe plural governance, specific make-or-buy choices should therefore be examined. Could it be the case that, in a given city, make-or-buy choices for car park infrastructures depend on transaction-level characteristics? Let us recall that we do not expect car park characteristics to differ substantially in a given city. This sector was chosen because infrastructures are relatively standard. This first empirical analysis must therefore be seen as a preliminary check of make-or-buy choices at the transaction level, before studying plural governance at the city level in 'Study of plural governance: City-level sample' section.

In order to investigate this preliminary question, we constructed one dependent and four independent variables using data from the survey conducted by CEREMA.

Variables

The dependent variable is a dummy variable, which equals 1 when the car park infrastructure is outsourced to a private company. No plural alternative is possible in the transaction-level sample, since for each car park, the city can either provide the service in house or go to the market.

Independent variables should reflect the aforementioned transaction costs and resource-based views. Service characteristics are usually measured by surveys by authors who study multi-service settings (Brown & Potoski, 2003; Levin & Tadelis,

Table 1. Descriptive statistics

	N	Mean	Std. dev.	Min.	Max.
Transaction-level sample					
Outsourced	345	0.429	0.496	0	1
Number of slots	345	387.530	285.110	20	2,099
Age (in months)	345	203.725	146.259	1	568
City center	345	0.464	0.499	0	1
Potential attendance	345	3.377	1.132	0	6
City-level sample					
MNL 1: categories of the dependent variable[a]					
Private	97	0.351	0.480	0	1
Public	97	0.433	0.498	0	1
Plural	97	0.217	0.414	0	1
MNL 2: categories of the dependent variable[b]					
Private	97	0.464	0.501	0	1
Public	97	0.361	0.483	0	1
Plural	97	0.175	0.382	0	1
MNL 3: categories of the dependent variable[c]					
Private	97	0.351	0.480	0	1
Public	97	0.361	0.483	0	1
Semi-public	97	0.062	0.242	0	1
Plural	97	0.227	0.421	0	1
Independent variables					
Mean debt *per capita* (2006–2010)	97	1.161	0.537	0.027	2.786
Mean population (2006–2010)	97	96.522	115.628	18.883	848.837
Mean income *per capita* (2006–2010)	97	12.179	3.728	6.850	41.750
Number of changes of political affiliation	97	0.505	0.879	0	5
Mean density (2006–2010)	97	3.672	4.213	0.310	25.145
Mean unemployment (2006–2010)	97	8.205	1.836	4.720	13.320
Number of car parks	97	6.268	5.177	2	29

[a]For the first multinomial logit (MNL), long-term contracts with public companies are considered as a 'public' alternative.
[b]For the second MNL, public companies are included in the 'private' alternative.
[c]In the third version of MNL, public companies are considered as a distinct category. This categorization is discussed in 'Study of plural governance: City-level sample' section.

2010). In this study, we choose to analyze one single public service, car parks, because we believe transaction characteristics are very similar between car parks in a given city. However, it is possible that some dimensions differ between transactions. In that vein, Porcher (2016) shows that transaction costs inherent to water services differ according to the type of water and the type of water treatment. In the following lines, we therefore describe the dimensions of car parks that are likely to influence transaction costs and capabilities needed to manage the infrastructures.

Four key characteristics may influence the make-or-buy choice for a given car park. The first is the size of the infrastructure: in our sample, the number of spaces in the car parks vary from 20 to more than 2,000 (see Table 1). From a transaction costs perspective, resorting to contracts with private firms decreases with asset specificity, as the latter increases the costs associated with externalization. A larger infrastructure may require more investment in specific assets, thereby exacerbating hold-up problems. Cities should therefore opt for in-house provision for larger infrastructures. However, private firms have developed the expertise to deal with large infrastructures, and their capabilities may be needed to operate these car parks. Hence, it is possible that the size of a given car park could have a positive effect on the probability of outsourcing in a resource-based view.

The second and third independent variables, *Age* and *City center*, measure the age of the infrastructure and identify car parks which are located in city centers. Indeed, older car parks and those located in denser areas may need larger and more specific investment, increasing the probability of them being provided in-house in a transaction costs view. But cities may also want to benefit from the expertise of private sector firms for these more complex infrastructures, which increases the probability of outsourcing in a resource-based view.

Table 2. Definition, source and expected sign of independent variables (transaction-level analysis)

	Definition	Source	*N*	Expected sign[a]
Number of slots	Number of spaces in the infrastructure	CEREMA	345	−(TCE) or + (RBV)
Age (in months)	Age of the infrastructure (in months)	CEREMA	345	−(TCE) or + (RBV)
City center	Dummy variable identifying infrastructures, which are located in city centers	CEREMA	345	−(TCE) or + (RBV)
Potential attendance	Score of potential attendance ranging from 0 (very low) to 6 (very high)	CEREMA	345	−(RBV) or + (TCE)

[a]TCE stands for transaction costs economics, and RBV for resource-based view. The dependent variable is a dummy, which equals 1 if the car park is outsourced.

Finally, *Potential attendance* is a score that varies from 0 to 6. In the CEREMA questionnaire, cities were asked to indicate whether (1) shops, (2) residents, (3) offices, (4) cultural centers, (5) train stations, or (6) other factors generate demand for parking activities in the neighborhood of each car park. The score *Potential attendance* equals 0 when none of the six items are present around the car park, and it equals 6 when all six items potentially generate demand. This variable is central in a transaction-level analysis, as it is a good proxy for demand uncertainty. In line with transaction cost arguments, cities may prefer in-house provision when uncertainty is high (i.e., when potential attendance is low). Conversely, cities may resort to outsourcing when potential attendance is low, as private firms may be better able to deal with uncertainty.

Table 2 presents the definition, source, and expected sign of independent variables. Their influence on the probability of outsourcing a given car park is estimated using a Probit model with and without city fixed effects. City fixed effects enable controlling for city-specific characteristics, and thus for investigating the influence of service characteristics on make-or-buy decisions in a given city.

Results

The results of the transaction-level analysis are presented in Table 3.

The results of both models (with and without city fixed effects) indicate a low explanatory power of car park characteristics on the probability of outsourcing the service. Model 2, in particular, indicates that in a given city, the size, age, and geographical location of the infrastructure have no influence on the make-or-buy choice. It is only potential attendance that has a positive influence on the probability of outsourcing: in line with the transaction cost argument, public authorities are more willing to turn to private firms to manage transactions which are characterized by lower levels of uncertainty (i.e., higher levels of potential attendance). When potential attendance is high, outsourcing to a private firm may be easier because there is a higher number of potential suppliers and because externalization contracts are easier to write.

According to the marginal effects displayed in the last column in Table 3, an additional source of potential attendance leads to an increase in the probability of outsourcing of 9.5%. However, the Wald test provides low support for this first specification, as the null hypothesis (all the coefficients are simultaneously equal to zero) cannot be rejected with the usual level of confidence of 95%. Overall, the results indicate that even if levels of uncertainty seem to play a role in the outsourcing decision, make-or-buy choices are poorly explained by transaction-level characteristics in the car park sector. This finding is in line with previous studies, which found that car park services exhibit low levels of specificity (Brown & Potoski, 2003). The standard nature of the car park infrastructure motivated us to choose this sector for our study, as it enables us to move from a transaction- to a city-level analysis in order to study plural governance.

Study of plural governance: City-level sample

Aggregation at the city level is necessary to observe plural sourcing and to study the rationales behind plural governance by testing Hypotheses 1–3.

Variables and empirical strategy

The empirical strategy must enable to compare the plural alternative to the two other polar solutions (complete internalization and complete externalization). As explained by Parmigiani (2007), the best way to model this decision is to use a multinomial logit, because this model allows to make pairwise comparisons of the sourcing modes, rather than considering a make-or-buy continuum.

Dependent variables

We estimate three models, each referring to a different construction of the dependent variable. Until now, a city's choice about the management of its car parks has been presented

Table 3. Results of the transaction-level of analysis

	Model 1		Model 2	
	Probit coefficients	Marginal effects	FE probit coefficients	Marginal effects
Number of spaces	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Age (in months)	−0.000	−0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.001)	(0.000)
City center	−0.075	−0.029	−0.082	−0.031
	(0.143)	(0.055)	(0.210)	(0.080)
Potential attendance	0.174***	0.067***	0.251**	0.095***
	(0.064)	(0.024)	(0.099)	(0.035)
Constant	−0.777***		−1.010***	
	(0.238)		(0.362)	
City fixed effects	No		Yes (83 cities)	
N	345		345	
Wald χ^2	7.930		7.920	
P-value for Wald test	0.094		0.095	
Pseudo-R^2	0.017			

Note: Significance levels: ***$p < 0.01$, **$p < 0.05$ *$p < 0.1$. Transaction-level sample (one observation per car park). In both models, the dependent variable is a dummy, which equals 1 if the car park is outsourced, 0 otherwise. Unlike Model 1, Model 2 includes city fixed effects.

as dichotomous: make or buy. But the choice is slightly more complex, as there are several ways to 'buy': a city can conclude contracts with public or private firms. There are, therefore, three distinct alternatives for each car park: in-house provision, outsourcing to a public company, or outsourcing to a private firm. In the survey, each city had to indicate its mode of governance for each car park. Therefore, we know, for each municipality, whether it (1) completely externalizes its car parks (i.e., every infrastructure is outsourced), (2) completely internalizes its car parks (i.e., every infrastructure is provided in house), or (3) uses plural sourcing (i.e., some infrastructures are outsourced while others are managed in house). Each dependent variable is therefore a class variable, which identifies the mode of provision for each city, in 2010.

We construct three dependent variables, each of which refers to a different categorization of the externalization to public companies. As noted by Levin and Tadelis (2010) and Brown and Potoski (2003), externalization to public companies may not incur the same trade-offs as externalization to private entities. In French law, public firms are defined as companies for which the principal shareholder is one or several public entities.[7] When a city externalizes a public service to a public company, it ensures that the public interest is taken into account in the objectives of the firm. However, public firms are supposed to be treated exactly as private entities when a call for tenders is made, and the control of the city over the public service once it has been outsourced, even to a public company, is not as strong as in the case of internal provision.

As there is no clear-cut answer on how to treat public companies in the empirical strategy, we proceed as follows. In the first estimation, we consider externalization to public companies to be the same as in-house provision; in the second estimation, we consider externalization to public companies as private provision (i.e., as externalization to private firms); and in the last estimation, we consider externalization to public companies as a distinct category. The descriptive statistics in Table 1 show that around 6% of the cities in the sample externalize every car park to public companies; 35% of the cities externalize every car park to private companies; 36% opt for complete in-house provision; and a little less than 23% use plural governance (i.e., a mix of at least two of the three preceding modes of sourcing).

Independent variables

The set of independent variables must be able to take city specificities into account, and to test for Hypotheses 1–3. Each of the following variables (except the political variable) is averaged over the 2006–2010 period. The observed governance mode in 2010 is the result of choices made in the past, and the independent variables should not be measured in 2010. Moreover, the use of lagged variables may attenuate endogeneity issues.[8]

[7] The words 'public companies' refer to the French 'Sociétés d'Économie Mixte (SEM),' which can also be translated as 'semi-public companies.' In such firms, there must be at least one private company among the shareholders, and the participation of public entities cannot exceed 85% of the capital.

[8] Potential endogeneity problems are discussed with results hereafter.

Table 4. Definition, source, and expected sign of independent variables (city-level analysis)

	Definition	Source	*N*	Expected sign[a]	Hypothesis
Mean debt *per capita* (2006–2010)	Mean debt of the city, in thousands of euros per inhabitant	INSEE	97	+	H1
Mean population (2006–2010)	Mean population of the city, in thousands of inhabitants	INSEE	97	+	H2
Mean income *per capita* (2006–2010)	Mean income per capita of the city, in thousands of euros per inhabitant	INSEE	97	+	H2
Number of changes of political affiliation	Number of changes of political affiliation of the city between 1989 and 2010	CDSP	97	+	H3
Mean density (2006–2010)	Mean density of the city in thousands of inhabitants per square kilometer	INSEE	97		Control
Mean unemployment (2006–2010)	Mean unemployment of the city	INSEE	97		Control
Number of car parks	Number of car park infrastructures in the city	CEREMA	97		Control

[a]Expected sign on the probability of plural governance.

The variable *Mean debt*, which measures the mean level of debt per capita in thousands of euros per inhabitant, is used to test for Hypothesis 1.

Mean levels of population (in thousands of inhabitants) and of income per capita (in thousands of euros per inhabitant) are used to test for Hypothesis 2.

The number of changes of political affiliation in a given city allows to test for Hypothesis 3. This variable is measured from 1989 to 2010 (municipal elections took place in France in 1989, 1995, 2001, and 2008). In our sample, it varies from 0 to 5, which indicates that a change in the mayor can take place outside of elections (e.g., when the incumbent is appointed as a minister or dies in office).

The analysis includes three control variables: *Mean Density*, *Mean Unemployment*, and *Number of car parks*.

It is important to include a measure for density (which is measured in thousands of inhabitants per square kilometer) in this empirical investigation. First, parking policies are more challenging and the infrastructure may be more complex to build and operate in dense areas. Second, the markets are more likely to be competitive in densely populated cities (Brown & Potoski, 2003), and a competitive market is necessary to benefit from the cost savings involved in externalization (Sclar, 2001; Williamson, 1976). We conclude that in very dense cities, which benefit from fierce competition between suppliers, outsourcing is more likely to lead to cost savings, so plural governance will be less necessary for saving costs.

The level of unemployment allows us to control for the presence of interest groups that are against externalization. Empirical studies usually include measures for unionized (public) workers, who are supposed to prefer in-house production (Levin & Tadelis, 2010; Warner & Hebdon, 2001), but, as figures for unionized workers are not available in France, we use unemployment, which is a proxy for the presence of low-income interest groups which prefer public provision (Bel & Fageda, 2009). *Mean Unemployment* is the only variable that cannot be measured at the municipal level; French national government uses the term 'employment areas,' which include several municipalities, to measure employment at the local level (a map of employment areas is available upon request). Therefore, this variable is an imperfect proxy for municipal unemployment. The presence of high-income households in favor of externalization is captured by the variable *Mean income per capita*.

Finally, we have to control for the number of car parks in the city, as plural sourcing is more likely to be used by cities that have a higher number of car parks.

Table 4 summarizes the expected signs for the independent variables. The next subsection discusses the results.

Results

Tables 5–7 present the results for the analysis of plural governance. In each table, the left-hand column presents the coefficients of multinomial logits, which enable pairwise comparisons. For instance, in Table 5, the coefficients indicate that the more indebted cities rely less not only on complete externalization than on plural governance (column 1), but also on complete in-house provision than on plural governance (column 2). While the sign and significance of multinomial logit coefficients can be interpreted, their value cannot. Hence, the three right-hand side coefficients display marginal effects to estimate effect size. For example, the first coefficient in the fourth column of Table 5 indicates that an increase in the debt of 1,000 euros per inhabitant increases the probability of plural governance by 20%.

As explained earlier, the three estimates differ according to the construction of the dependent variable: externalization to public companies is considered as in-house provision in Table 5, as externalization to private companies in Table 6, and as a distinct alternative in Table 7.

Table 5. Multinomial logit 1: considering the externalization to public companies as in-house provision

	Private versus plural	Public versus plural	Private	Plural	Public
	Multinomial logit (MNL)		Marginal effects at mean (MEM)		
Mean debt	−1.456**	−1.005**	−0.199	0.200**	−0.001
	(0.579)	(0.488)	(0.128)	(0.078)	(0.105)
Mean population	−0.008	−0.029**	0.003	0.003**	−0.005***
	(0.008)	(0.011)	(0.002)	(0.001)	(0.002)
Mean income per capita	−0.202***	−0.362**	0.008	0.044***	−0.051**
	(0.069)	(0.146)	(0.018)	(0.014)	(0.026)
Changes of affiliation	0.203	−0.249	0.090	0.000	−0.090
	(0.367)	(0.419)	(0.067)	(0.057)	(0.070)
Mean density	0.187**	0.087	0.032***	−0.023	−0.010
	(0.081)	(0.097)	(0.011)	(0.014)	(0.014)
Mean unemployment	−0.006	−0.017	0.001	0.002	−0.003
	(0.188)	(0.195)	(0.030)	(0.029)	(0.030)
Number of car parks	−0.150	0.055	−0.046**	0.009	0.036
	(0.113)	(0.161)	(0.022)	(0.019)	(0.029)
Constant	5.874***	8.527***			
	(2.080)	(2.778)			
N	97	97	97	97	97
Pseudo-R^2	0.221	0.221			

Note: Significance levels: ***$p < 0.01$, **$p < 0.05$ *$p < 0.1$. Standard errors clustered at the departmental level in parenthesis. This table presents the result of a multinomial logit, where the dependent variable is the chosen method of management of car park services in 2010 (in-house provision, plural provision, or long-term contracts with the private sector). The 'plural' alternative is the base category and corresponds to situations where the municipality chooses to use both in-house provision and long-term contracts. The externalization to public companies is considered as in-house provision. The two left-hand columns present the coefficients of the MNL, while the three right-hand columns display the marginal effects at mean.

All three specifications present high values of pseudo R^2,[9] indicating that the model enables to accurately understand the governance choices of cities for car park services. The robustness of our results across the three different specifications further increases confidence in the model. Interestingly, pseudo R^2 is slightly higher in Table 7, indicating that using public companies should be considered as a distinct alternative. However, the sign and significance of multinomial logit coefficients are relatively comparable in columns 1, 2, and 3 of Table 7, which indicates that the trade-offs are not fundamentally different when we oppose plural to complete private provision (column 1), to complete externalization to public companies (column 2), or to complete in-house provision (column 3). This suggests that the important issue is to combine different structures, and that externalization to public companies is not an alternative to plural governance. As previously mentioned, the use of public companies could provide the benefits of externalization while ensuring that the public interest is taken into account. However, it may not improve the efficiency of public service delivery as it does not enable benchmarking strategies if not associated with another governance structure.

Our results do not indicate that externalization increases with the level of debt, but rather that, in indebted cities, plural sourcing is favored over both in-house provision and contracting out. The size of the effect is not trivial: across specifications, an increase in debt of 1,000 euros per inhabitant increases the probability of plural governance by 20% (Table 5) to 24% (Table 7). Externalization may indeed replace one problem (public sector inefficiency) with another (opportunism of the contracting partner), and plural governance can then be used as a way to control for supplier opportunism. Finally, we should point out that endogeneity issues are mitigated by our single service approach. While we might claim that the governance choices for public services influence levels of debt, which may, of course, be true, the influence of the governance structure of one public service certainly has a moderate impact on the overall level of debt of a municipality. Moreover, if anything, cities that use plural strategies should have lower levels of debt, which can only attenuate the size of the estimated coefficients. Overall, our results therefore provide strong support for Hypothesis 1.

Plural governance is used by richer, and to a lesser extent, larger cities. While a per capita income increase of 1,000 euros

[9] Values of 0.2–0.4 for pseudo R^2 represent an excellent model fit (Hensher & Johnson, 2018).

Table 6. Multinomial logit 2: Considering the externalization to public companies as private provision

	Private versus plural	Public versus plural	Private	Plural	Public
	Multinomial logit (MNL)		Marginal effects at mean (MEM)		
Mean debt	−1.976***	−1.138**	−0.307**	0.228***	0.079
	(0.575)	(0.470)	(0.129)	(0.073)	(0.093)
Mean population	0.001	−0.025**	0.004***	0.001*	−0.005***
	(0.003)	(0.010)	(0.001)	(0.001)	(0.001)
Mean income per capita	−0.218***	−0.288**	−0.010	0.031***	−0.021
	(0.066)	(0.128)	(0.017)	(0.009)	(0.018)
Changes of affiliation	0.241	−0.226	0.090	−0.014	−0.075
	(0.400)	(0.453)	(0.068)	(0.050)	(0.058)
Mean density	0.179**	0.074	0.032**	−0.020	−0.012
	(0.085)	(0.103)	(0.013)	(0.012)	(0.013)
Mean unemployment	0.001	−0.104	0.015	0.004	−0.019
	(0.207)	(0.193)	(0.036)	(0.025)	(0.025)
Number of car parks	−0.192**	−0.076	−0.035**	0.021**	0.014
	(0.082)	(0.119)	(0.016)	(0.011)	(0.017)
Constant	6.647***	8.859***			
	(2.179)	(2.933)			
N	97	97	97	97	97
Pseudo-R^2	0.252	0.252			

Note: Significance levels: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Standard errors clustered at the departmental level in parenthesis. This table presents the result of a multinomial logit, where the dependent variable is the chosen method of management of car park services in 2010 (in-house provision, plural provision, or long-term contracts with the private sector). The 'plural' alternative is the base category and corresponds to situations where the municipality chooses to use both in-house provision and long-term contracts. The externalization to public companies is considered as outsourcing. The two left-hand columns present the coefficients of the MNL, while the three right-hand columns display the marginal effects at mean.

increases the probability of plural governance by 3.1% (Table 6) to 4.7% (Table 7), the influence of the *Mean population* variable is significant but close to zero. It is useful to recall that the *Mean income per capita* variable might capture the supposed preferences of high-income households for privatization. However, this does not seem to be the case as high-income cities also favor plural sourcing over complete externalization. The results thus suggest that plural governance is adopted by cities that have sufficient capabilities, that is large and rich ones (Hypothesis 2). However, the size of the effect is small, indicating either that capabilities do not play a large role in plural governance decisions or that the two variables do not correctly measure cities' capabilities.

Hypothesis 3 is not supported by the results, and plural governance does not seem to result from political changes at the head of the city. Political effects were also tested in two other ways: using a dummy that identifies the cities that have had at least one change in political affiliation (instead of a number of changes), and with a finer distinction of political parties instead of a simple left-or-right dichotomy. The coefficients associated with political variables are never significant across specifications (tables of results are available upon request). The results, by dismissing Hypothesis 3, provide stronger support for Hypothesis 1: plural sourcing of public services is not the result of 'historical accidents,' that is different decisions taken by different mayors. Rather, it appears to be a deliberate choice for improving the economic efficiency of public service delivery.

Interestingly, denser cities rely more on complete externalization than on plural sourcing. Even if the result is rather small (an increase of 1,000 inhabitants per square kilometer results in a 3.2% increase in the probability of outsourcing, see Tables 5 and 6), *Mean density* still plays a significant role. The transaction-level analysis has shown that externalization is more likely when uncertainty is low (Table 3), and, as underlined before, dense cities face more demand for parking services. They are, therefore, more likely to benefit from externalization, because the supplier market is more competitive. Thus, there is less of a need for plural governance to employ benchmarking strategies in such municipalities, and complete externalization is more likely to reduce the cost of service delivery.

Unemployment does not seem to play a role in sourcing decisions. This may be linked to the fact that citizens' sensitivity for car park services is low (Levin & Tadelis, 2010), which is in line with the previously discussed results on the *Mean*

Table 7. Multinomial logit 3: considering the externalization to public companies as a distinct alternative

	Private versus plural	Public comp. versus plural	Public versus plural	Private	Plural	Public comp.	Public
	Multinomial logit (MNL)			Marginal effects at mean (MEM)			
Mean debt	−1.562***	−2.358**	−0.955**	−0.224*	0.241***	−0.054	0.037
	(0.604)	(1.013)	(0.471)	(0.136)	(0.089)	(0.042)	(0.088)
Mean population	−0.007	−0.019	−0.032***	0.003*	0.003**	−0.000	−0.005***
	(0.007)	(0.013)	(0.011)	(0.002)	(0.001)	(0.000)	(0.001)
Mean income per capita	−0.214***	−0.698***	−0.327**	0.001	0.047***	−0.021	−0.027
	(0.073)	(0.210)	(0.138)	(0.018)	(0.014)	(0.015)	(0.020)
Changes of affiliation	0.143	−0.245	−0.340	0.082	0.005	−0.009	−0.078
	(0.346)	(0.588)	(0.410)	(0.068)	(0.056)	(0.019)	(0.060)
Mean density	0.215**	0.193**	0.112	0.036***	−0.031*	0.002	-0.007
	(0.098)	(0.090)	(0.114)	(0.013)	(0.017)	(0.003)	(0.013)
Mean unemployment	−0.022	0.124	−0.094	0.003	0.006	0.007	−0.016
	(0.205)	(0.374)	(0.211)	(0.033)	(0.033)	(0.011)	(0.026)
Number of car parks	−0.207*	0.011	−0.056	−0.045**	0.025	0.005	0.015
	(0.107)	(0.173)	(0.131)	(0.022)	(0.017)	(0.007)	(0.019)
Constant	6.502***	9.820**	9.215***				
	(2.298)	(4.131)	(3.021)				
N	97	97	97	97	97	97	97
Pseudo-R^2	0.254	0.254	0.254				

Note: Significance levels: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Standard errors clustered at the departmental level in parenthesis. This table presents the result of a multinomial logit, where the dependent variable is the chosen method of management of car park services in 2010 (in-house provision, long-term contracts with public companies, plural provision, or long-term contracts with the private sector). The 'plural' alternative is the base category and corresponds to situations where the municipality chooses (1) to use both in-house provision and contracts with private companies, (2) to use both in-house provision and contracts with public companies, or (3) to use both private contracts and contracts with public companies. The two left-hand columns present the coefficients of the MNL, while the three right-hand columns display the marginal effects at mean.

income variable. However, our estimates may not be precise because this variable could not be measured at the municipal level.

Finally, the results indicate that we should see plural governance as a distinct governance structure that can be preferred to complete externalization (to private and/or public firms) and complete in-house provision (Parmigiani, 2007). More specifically, the results show that indebted and rich cities are more likely to resort to plural governance rather than complete outsourcing and complete vertical integration.

Conclusion, limitations, and future research

In this article, we aimed to study the behavior of local governments through the lenses of strategic and public management. Studies conducted in private settings are useful for understanding plural governance as a strategic behavior, and public administration studies allow us to better understand the specificities of the public sector in general, and more specifically, of local governments and their management of public services.

We show that the level of uncertainty that characterizes transactions negatively influences the probability of outsourcing. But transaction-level analyses are not sufficient for understanding cities' sourcing strategies. Beyond the fact that the explanatory power of the models in 'Study of make-or-buy choices: Transaction-level sample' section is very low, an aggregation at the city level is necessary to observe plural governance. City-level analysis shows that richer and more indebted cities favor plural governance over complete externalization and complete in-house provision. Our results indicate that plural governance is a distinct governance choice, which should not be considered as an intermediate solution on a make-or-buy continuum. Cities with high debt burdens are more likely to implement strategies to increase economic efficiency of service delivery, and larger and richer cities have the capabilities to implement plural governance. We therefore contribute to the contract literature: if transaction-related attributes are an important dimension to design governance, we demonstrate that contractor characteristics are equally important. As contractors, cities have political and population traits that provide them with a specific style when they cope with transaction problems. Contracting perspectives and resource-based

view must then be seen as complementary approaches to understand plural governance for the management of local public services.

Our work is in line with recent studies that build bridges between strategic and public management. When previous studies have shown that plural governance is used by private firms because it enables the use of benchmarking strategies and gives valuable information to control for the opportunism of suppliers (Heide et al., 2014; Kidwell & Nygaard, 2011; Parmigiani, 2007), we demonstrate that these insights are also helpful for understanding public actors' interactions with firms through local procurement. Strategic management scholars have shown an increased interest in interactions between public and private actors because of their complexity (Cabral et al., 2019) and their importance in delivering social value (Quelin et al., 2017). We believe that it is important to study the strategic behaviors of public actors, without ignoring their specificities, which are mostly due to their public nature and exposure to political factors (Spiller, 2008). By transferring contracting theories to the public sector, we aim to shed light on the importance of political dimensions in governance choices for public services. Variables such as debt, unemployment, income, or political affiliations must be taken into account in empirical investigation of public actors' behaviors. Surprisingly, our results indicate that plural governance does not result from political alternations at the head of the city. This may be due to the fact that car park services are characterized by low levels of resident sensitivity (Beuve & Le Squeren, 2016; Levin & Tadelis, 2010). Citizens may be more sensitive to the mode of provision of other types of public services, such as crime prevention or emergency medical services (Levin & Tadelis, 2010).

We also believe that we contribute to the public management literature, as our study adds knowledge about the sourcing decisions of local governments. Although make-or-buy choices have been extensively studied in the literature (Bel & Fageda, 2009), they still need further investigation (Porcher, 2016). We believe that adopting a strategic management perspective is useful for understanding the trade-offs that are at stake in plural governance for local public services. Our results indicate that studies that investigate governance choices as belonging to a make-or-buy continuum are likely to be biased, as plural governance should be considered as a distinct governance structure. Our empirical findings also suggest that externalization is not necessarily the key to reducing costs associated with the delivery of public services. Specific governance mechanisms, such as plural governance, appear crucial to control for the opportunism of suppliers. We therefore believe that cities should not only base their make-or-buy decisions on service characteristics but also invest in contract-management capabilities and adopt plural governance, especially when the risk of opportunistic behaviors from suppliers is high. Plural governance may also be crucial for public services that are particularly important for citizens' welfare, and the ones that generate high budget expenditure.

Our study, of course, has some limitations, which open avenues for future research. First of all, our analyses could be enriched by the use of a larger dataset: the robustness of the results and the precision of the estimates would be improved with a higher number of observations. Finer-grained data would also help to better measure transaction and city characteristics. Transaction-level measures of asset specificity, management complexities, and need for capabilities, such as in Levin and Tadelis (2010) or Brown and Potoski (2003), would allow to better disentangle the potential theoretical explanations for make-or-buy choices for each infrastructure. However, this was not the main focus of the paper, and the car park sector was chosen because of the high standardization of its infrastructure. Moreover, finer data to measure city-level characteristics would enhance our understanding of the rationales behind plural governance. In particular, city capabilities could be further investigated using measures such as the number of employees in teams responsible for parking policies or past experience of public employees. An additional questionnaire would be needed to construct such measures.

The external validity of our results can also be questioned. We believe that our results are not only useful to understand the management of car park services, but also of other local public services. If plural governance is used to increase economic efficiency of service delivery, it can be used for every service. However, public services may vary according to some dimensions, such as their complexity or the sensitivity of citizens. We believe that more complex public services are even more likely to be managed using plural governance, because internal provision is even more important to get access to relevant information. We also believe that services that are characterized by higher levels of resident sensitivity are more likely to be influenced by political variables. This may be the case, for example, for household waste collection. Citizens are usually sensitive to the quality of this service (Levin & Tadelis, 2010), which is largely privatized in Europe as in the United States. However, Bel, Fageda, and Warner (2010) have shown that privatization of solid waste does not necessarily reduce costs, and they highlight the importance of government management, oversight, and regulation to ensure the efficiency of service delivery. We therefore believe that this kind of service would typically benefit from plural governance.

Future research investigating the stability of plural governance over time and the influence of plural governance on efficiency would be of particular interest. Our results indicate that cities adopt plural governance because they believe it can increase the efficiency of service delivery. A longitudinal study would help to validate this interpretation: if plural governance

is adopted as a strategy for decreasing costs, it should be stable over time. Moreover, studies that would confirm – or disprove – that plural governance helps to decrease costs are needed to adopt a normative perspective on that question. More generally, while studies that assess the efficiency of sourcing modes are particularly valuable, they require very precise panel data in order to properly identify a causal effect. Such studies also need convincing measures of public service efficiency, which are often difficult and costly to construct. These limitations open rich avenues for future research.

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ORIGINAL RESEARCH ARTICLE

Bounding Boundaries: Building a Typology of Careers with the Concept of Boundary

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Abstract

The core idea of this paper is that the concept of boundary can help us to understand the social form careers take. The concept of boundary has informed much of the literature on careers. Scholars are now looking beyond the boundaryless/boundaried divide as the boundaryless argument has been convincingly contested theoretically and empirically. This is what we do in this article. It offers a definition of career boundaries which can be empirically tested as both objective and subjective construct along two dimensions: the existence of fixed career patterns and that of individual, shared, or collective awareness of these patterns. This leads us to build a six-case typology combining these two dimensions. To test the explanatory power of this theoretical framework, we use the original case of French poets. As poets do not work in stable organizations, we could expect erratic careers. We find that poets' careers are not erratic, but follow fixed patterns, structured by publishers and the pace of publications, with, respectively, shared and individual awareness of these patterns. We also find that similarly reputed poets tend to follow similar career patterns as they cross the same boundaries at a similar moment in their career. We end by discussing how our typology can help to understand careers, using examples from the literature from various professional settings.

Keywords: *Career boundaries; Creative industries; Poetry; Career patterns; Awareness*

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The core idea of this paper is that the concept of boundary – understood as the "physical, temporal, emotional, cognitive, and/or relational limits that define entities as separate from one another" (Ashforth, Kreiner, & Fugate, 2000, p. 174) – can help us to understand the social form careers take. The concept of boundary has informed much of the scholarship on careers and organizations (Bird, Gunz, & Arthur, 2002; Rodrigues & Guest, 2014a). One leading idea has been that careers are becoming increasingly boundaryless (Arthur, 1994; Bird, 1994). The boundaryless theory can first denote a career moving "across the boundaries of separate employers" (Arthur, 1994, p. 296), as opposed to an organizational career comprising a series of organizational positions (Wilensky, 1961). Boundaryless career theory has been criticized for lacking both conceptual precision (Inkson, Gunz, Ganesh, & Roper 2012) and empirical reality (Dries, Van Acker, & Verbruggen, 2012; Rodrigues & Guest, 2010), as boundaryless careers concern only a limited number of competitive workers, which may blur the fact that many careers remain organizational (Clarke, 2013; Kilduff & Corley, 1999). Boundarylessness may thus be more a metaphor "aiming to highlight trends in contemporary careers than a fully developed theory" (Rodrigues & Guest, 2014b, p. 610). More recently, scholars have attempted to go beyond the boundaried/boundaryless divide (Arthur, 2014; Gunz, Peiperl, & Tzabbar, 2007; Rodrigues & Guest, 2014a, 2014b). As Budtz-Jørgensen, Johnsen and Sørensen (2019, p. 918) note "contemporary career development cannot be fully captured without new concepts that allow us to understand how boundaries are currently being reconfigured in work organizations." We cannot do this without taking into account one of the main insights of career conceptualization and investigation, i.e., that careers are both an objective and subjective construct (Becker, 1952; Budtz-Jørgensen et al., 2019). How then can we define a workable concept of career boundaries encompassing different kinds of career boundaries (organizational or not), while effectively bridging the subjective and objective dimensions of careers?

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We propose defining career boundaries on two related dimensions (Barley, 1989). The first, objective dimension, of career boundaries refers to the existence of fixed patterns that structure professional trajectories. The second, subjective dimension, of career boundaries is the awareness that actors have (or not) of these fixed patterns. This definition enables us to develop a transposable, effective typology of careers as well as the methodological apparatus necessary for empirical investigation. Our second major aim is to explore whether creative careers are bounded or, as they have often been described, boundaryless, probably because they are not organizational (Jones, 1996; Stjerne & Svejenova, 2016; Zwaan, ter Bogt, & Raaijmakers, 2010). We empirically at creative industry careers boundaries by exploring what first structures creative fields, namely, reputation (Bourdieu, 1996; Menger, 1999; Peltoniemi, 2015). Our aim is then to discuss reputation as a new career boundary, which, to our knowledge, has not yet been investigated. Reputation in creative fields rests on collaborations between artists and 'gatekeepers' (publishers, art dealers, etc.) (Hirsch, 1972) able to disseminate artists' work to their audiences (the public, critics, and peers). Artists collaborate with these gatekeepers when, for instance, publishing a book. Having (or not) collaborations with more or less reputed gatekeepers thus determines artistic success (Giuffre, 1999). This suggests that for artistic careers collaborations with gatekeepers might constitute a boundary related to reputation-making.

To test these ideas, we have chosen the case of French contemporary poets. Poets are not salaried by publishers, but lead one-shot collaborations: their careers are not organizational, like most artistic workers (Menger, 1999). Publishers are the most powerful gatekeepers for poets (Sapiro, 2019). This leads us to explore whether collaborations with publishers structure poets' careers, and act as a career boundary. Following our definition, this raises two questions. Can we find objective fixed patterns in poets' careers, organized around their associations with publishers? If we do, are poets aware of these patterns? We show that poets' careers are not quite so unstructured as they might seem at first. Instead, they are shaped by reputation processes in which publishers, and publishers' reputations, play a central role, and where similarly reputed poets tend to follow similar careers paths.

We begin by discussing concepts of boundary and career boundary. From this, we deepen our theoretical analysis of career boundaries, ending with a usable and reproducible typology of career boundaries. We turn to artistic career boundaries to highlight why they are conducive to exploring career boundaries, before introducing our empirical design, data, and method. The next section exposes our findings, as we find two out of our five boundary types in French poets' careers, related to reputation building. We then consider all our boundary types in the discussion section, using both our results and existing literature. We conclude by suggesting new avenues for career research.

Theoretical background

Boundaries

Boundaries are commonly conceptualized as lines that circumscribe entities (Quick & Feldman, 2014; Tilly & Tarrow, 2006), demarcating or categorizing organizations, occupations, or social groups (Ashforth et al., 2000). Abbott (1995b) argues that social entities do not predate boundaries, but rather that boundaries create social entities. This statement might seem counterintuitive. We often conceive that entities come first, as is the case with our human body. Our bodies have obvious boundaries, which derive from its physical existence: this is how we perceive (see, hear, etc.) the world around us. For Abbot, the process of constructing a social entity obeys a diametrically opposed logic: boundaries emerge and can sometimes engender the entities that they enclose. Boundaries are thus fixed elements of the social structure, but they are not set in stone. They result from a social process, a flux. They are not a fixed demarcation, as Langley et al. (2019) note and insist that our definition should not take boundaries for granted, but should rather account for their creation or transformation. In other words, it should take into account the history of boundary transformation within specific social contexts. As Hernes (2004, p. 10) put it, "boundary setting is intrinsic to the very process of organizing." We should distinguish between "symbolic" boundaries, which are "conceptual distinctions made by social actors to categorize objects, people, practices, and even time and space," and social boundaries, which are "objectified forms of social differences […] revealed in stable behavioural patterns of association" (Lamont & Molnar, 2002, p. 168). Boundaries are both objective and subjective constructs (Abbott, 1995a). They not only demarcate entities, but actors interpret their doing so. Actors can be right or wrong in understanding boundaries (Bourdieu, 1978). A crucial point is that actors can frame, manipulate, span, or move boundaries: this is 'boundary work' (Langley et al., 2019). Inkson et al. (2012) argue that boundaries have traditionally served three distinct roles: as constraints (restricting possibilities), as enablers (facilitating development), and as punctuators (structuring development). Boundaries appear not only as a source of legitimacy and self-protection and act as a tool to allow other things to happen because of their capacity to separate or bring particular people, objects, and ideas into new configurations.

Career boundaries

Careers provide a prime framework, in which to elaborate on the concept of boundary (Inkson et al., 2012). Indeed, in the

wake of the Chicago School of Sociology (Becker & Strauss, 1956; Hughes, 1937), careers can be defined as a "stream of more or less identifiable positions, offices, statuses, and situations that serve as landmarks for gauging a person's movement through the social milieu" (Barley, 1989, p. 49). When shifting positions, actors cross the lines that separate the positions which succeed one another; this series of positions makes a career. Career boundaries are the lines actors cross when shifting positions. Careers are thus made of orderly related sequences of positions and boundary-crossing (Abbott & Hrycak, 1990; Barley & Tolbert, 1997; Dany, Louvel, & Valette, 2011). These changes of positions can be organizational, but they can also be a change in social status or knowledge domain (Lam, 2019). Workers' positions very rarely remain the same throughout their professional lives. As Gunz et al. (2007, p. 474) put it, "it is the nature of the boundaries crossed and the frequency of these movements from one side of fixed lines to another that give shape to careers. A career […] becomes a sequence of boundary-crossings that are largely responsible for giving it its form."

Beyond the debate about organizational boundaries (Bagdadli & Gianecchini, 2018; Rodrigues & Guest, 2010), research has explored non-organizational career boundaries. For instance, education largely shapes careers even long after graduation (Bol, 2015; Bourdieu, 1978; Schworm et al., 2017). Social capital and personal networks directly impact job searches, and thus shifts in positions (Granovetter, 1973). Career research has recently turned to cultural boundaries related to actors' values, knowledge, and perceptions (Lam, 2019), which have also been often overlooked (Staniland, Harris, & Pringle, 2019). Cultural boundaries can derive from the social as well as the professional context (Dafou, 2018). This includes gender, race, culture, and religion (Essers & Benschop, 2007). Hagan, Zatz, Arnold and Kay (1991) find that in the legal profession, women follow different career paths than men, which they call as the 'mommy track.' Race is also a boundary which determines career progress (Castilla, 2008). Ituma and Simpson (2009) find that not only gender but also ethnic allegiances shape information communication and technology (ICT) workers' careers in Nigeria, emphasizing the impact of the social and cultural context on career boundaries in a country where several ethnic groups live in conflict. The debate about the anonymous curriculum vitae demonstrates the power of these boundaries over careers, as well as the State policies intended to overcome these boundaries (Bóo, Rossi, & Urzúa, 2013). Career boundaries can thus be imposed by 'gatekeepers' on job opportunities (King, Burke, & Pemberton, 2005) or can be related to workers' preferences or constraints. Gubler, John and Crispin (2014) show that geographical preferences bound careers, resulting from social constraints and/or choices (home, family). Other preferences include job security (Dafou, 2018) and work–life balance, leading or constraining workers to make specific career choices like refusing a promotion or a new job, which would require them to move or would impact their personal life (Haar, Russo, Suñe, & Ollier-Malaterre, 2014). These individual choices are, of course, embedded in social contexts, such as the transformations of family life or the increasing importance given to the balance between private life and work (Henz & Mills, 2015).

Like any form of boundary, career boundaries have both an objective and a subjective dimension. This echoes what the sociology of work and careers has long insisted on, depicting career as a Janus-like concept with two faces – objective and subjective (Becker, 1963; Becker & Carper, 1956; Hughes, 1937). Indeed, actors themselves interpret the shifts in their career. Drawn again from Barley (1989) and the Chicago School of Sociology, the concept of career script has recently endeavored to bridge the objective and subjective dimensions of careers (Dany et al., 2011; Duberley, Cohen, & Mallon, 2006), describing careers as a series of sequences, a 'story,' or a script. Scripts are conceptualized as "plans for recurrent patterns of action that define, in observable terms, the essence of actors' roles" (Barley, 1989, p. 53). Dany et al. (2011, pp. 5–6) define scripts as "the processes that drive individual choices and actions," and thus in the case of academic careers promotion scripts as "the rules and norms that individuals have in mind when they think of their careers." As Laudel, Bielick and Gläser (2018) have argued, scholars using the concept of career script have focused on interpretive schemes enacted by individuals to the detriment of career patterns (Mallon, Duberley, & Cohen, 2005). The concept remains ambiguous about the balance between career structures and cognitive schemes, and it is significant that these studies rely on qualitative data exclusively. Laudel et al. (2018, p. 9) themselves define "the script of an organizational career [as] an interpretive scheme which reflects sequences of organizational positions that are typically successful in achieving specific career goals." Moves seem here to be once again only organizational, and this paradoxically seems to undermine the power of organizations to shape careers, as in the case of painters whose careers were strictly constrained by the French Academy (Delacour & Leca, 2011): painters' careers 'existed' out of the reach of individual painters, as a socially constructed path in a specific setting.

To avoid such confusions, we should *analytically* distinguish between the objective and subjective dimensions of careers. We argue that this is what the concept of boundary enables. We now discuss how this refinement of the concept of boundary helps not only to theorize careers further but also to develop a methodology to investigate career boundaries empirically. For instance, the concept should include time, as Rodrigues, Guest and Budjanovcanin (2016) suggest without resolving the problem. We thus aim in this article to frame a concept of career boundaries, which (1) would not be limited to organizational boundaries and (2) would fully integrate the

objective and subjective dimension. To do so, we redefine the concept of career boundary as the existence (or not) of fixed career patterns, combined with actors' awareness (or not) of these patterns. We discuss this framework in the next section.

Fixed patterns and awareness: A typology of career boundaries

The challenge is to identify which discontinuities structure careers in a given profession, forming a boundary. We suggest that these discontinuities can be identified through the existence of fixed patterns organizing careers (Biemann, Zacher, & Feldman, 2012). The idea of *fixed patterns* is that most careers follow preestablished, regular trajectories. As the Chicago School of Sociology has emphasized since the framing of the concept of career, we can speak of careers only if these fixed patterns do not concern only one person (Rodrigues et al., 2016), but constitute a pathway that people follow in a given social world (Becker, 1963; Hughes, 1996). As Gunz, Lichtenstein and Long (2002, p. 65) note, "A career system is the pattern of movement between work roles and across boundaries," meaning here that workers cross boundaries when shifting from one work role (or position) to another. These fixed patterns, organized by the order and cadence at which the stages of a career are navigated, are the first criterion for the identification of career boundaries. To establish fixed patterns (say, a career pattern like 'State A-State B-State'), it is necessary to identify the discontinuity that appears between stages A and B, then between B and C, and thus to include time. We argue that fixed patterns are the objective facet of careers.

Careers also refer to actors' subjective experience of their trajectory, and the meaning they give to it. As Rodrigues et al. (2016) point out, boundaries can be more or less visible. Institutionalized boundaries may be evident to all, such as those regulating academia with the clear line of tenure (Court, 1998); others may be difficult for actors to identify, for instance, because they are illegitimate, as in the cases of race and gender (Castilla, 2008; Essig & Soparnot, 2019). We thus need to measure the actors' awareness of these discontinuities. All this enables us to describe a boundary in terms of the actors' individual or collective awareness of fixed patterns governing their professional trajectory. More precisely, this awareness may be of three types: individual, shared, or collective. In the first case, some people may be aware of fixed patterns, whilst others (less lucid or well-informed) are not; some women may be aware that gender widely shapes careers, while others are not (Hagan et al., 1991). In this case, we speak of *individual* awareness. In the second case, assimilation within a professional group is such that almost all those in the group share the same vision of the normal stages of a career; here we speak of *shared* awareness. In the last case (*collective* awareness), the boundary has been institutionalized, so that actors cannot ignore the structuring of the different stages of their career: not only are the actors individually aware of the fixed patterns, but these patterns are also evident to all. Quite often, workers themselves contribute to shaping these boundaries through a professional association or a trade union: not only are all higher-education professors aware of fixed patterns based on the tenure system, but the academic community has contributed to the establishment of this career organization (Bedeian, Cavazos, Hunt, & Jauch, 2010).

This leads us to draw a six-case typology, summarized in Table 1. Our concept of boundaries combines the existence (or not) of fixed patterns, and the three possible forms of awareness (individual, shared, and collective).

We begin the presentation of our typology by briefly looking at what we call theoretical cases, since they are extremely rare or incoherent. The simplest situation is the absence of boundaries, where there is *neither* (individual, shared, or collective) boundary awareness *nor* a stable pattern. This is certainly an extreme case. We might suppose that very few cases exist where no fixed pattern appears and where workers move around in the social space as they wish (Gunz et al., 2007). If careers seem boundaryless, this may be because we do not use adequate criteria to analyze them. If, for instance, we attempt to look for a structure in artistic careers in terms of changes between organizations, the criterion is simply inappropriate. The combination of the absence of fixed patterns with collective awareness of these patterns is incoherent: it makes no sense that actors would have institutionalized patterns that would not exist. Our six-type typology is in reality a five-type one. We thus focus on these five remaining cases.

The *unknown* boundary designates situations where fixed patterns *objectively* structure actors' trajectories. Some actors may, of course, be aware of these fixed patterns, but most actors are not. The two next cases are when fixed patterns exist, and actors have shared awareness (a shared boundary) or collective awareness (an institutionalized boundary) of these patterns. A move from a *shared* boundary to an *institutionalized* boundary requires that institutionalized rules come to govern careers. The last two configurations (proto-boundary and symbolic boundary) correspond to what the Marxist tradition (Thompson, 2015) would have called 'false awareness.' This refers to actors who are convinced that certain social realities are established when they are not – in this case, that careers are structured by certain fixed patterns when, in fact, they are

Table 1. Boundary types

Fixed patterns	Individual awareness	Shared awareness	Collective awareness
No	Proto-boundary	Symbolic boundary	Incoherent
Yes	Unknown boundary	Shared boundary	Institutionalized boundary

ordered by other principles of which they are unaware. The problem with analyzing such situations is to identify the conditions in which some actors develop this inadequate view of trajectories in their field, while others adopt a different, perhaps more appropriate, view. The first type, for which we use here Abbott's (Abbott, 1995a) term, *proto-boundary*, describes situations in which some actors (but not all) are convinced that careers are ordered in certain ways when this is not the case. The second configuration, when false awareness is shared by many of the actors in a field, is the *symbolic boundary* (Lamont & Molnar, 2002). It does not mean that no other fixed patterns structure careers. As we have noted, careers rarely, if ever, have no boundaries. Rather, it means that actors do not see the fixed patterns: they use erroneous criteria and believe that a given pattern exists when it does not. Thus, careers can be, and often are, bounded by several intertwined boundaries, and our argument is that we have to identify and objectivize these boundaries to understand careers and professional settings.

Careers and career boundaries in the creative industries

Careers, social context, and projects in the arts

To test and discuss this framework, we have chosen the case of artistic careers. Artistic fields have been considered particularly appropriate for testing career boundaries. They are not structured around organizational boundaries, since artists are not employees of the cultural entrepreneurs who provide them with resources (Caves, 2000; Franssen & Kuipers, 2013). This is why boundaryless career researchers have studied them extensively (Jones, 2001; Sgourev, 2013; Stjerne & Svejenova, 2016; Zwaan et al., 2010), often presenting creative careers as prime examples of boundarylessness. In our view, art worlds offer a prime opportunity to investigate whether non-organizational boundaries can structure careers.

Far from the cliché of the lonely artist at work, creating, independent from any social constraint, artistic careers are also embedded in a specific social context (Becker, 1984). Art worlds are social spaces organized around one specific activity (art), which bring together all the actors necessary to produce art along a specific division of labor. Poets, for instance, "depend on printers, editors and publishers to circulate their work" (Becker, 1984, p. 21). Artistic production depends on a given social and economic setting, which, in turn, shapes artistic careers. Apollinaire or Picasso would not even have been imaginable in the Renaissance. At the time, painting had to respect the Aristotelian doctrine of mimesis as the imitation of nature meant praising God, His creation, and the king whose power derived from God. Artistic careers were subject to the patronage system in France and beyond (McClellan, 1993). Similarly, poets and writers had long been 'civil servants' to the nobility and the king (Preisig, 2007) in France and in other European countries (Pleij, 2002). Technology is another example of why artistic careers are rooted in a social context, far from the lonely artist cliché as emphasized by Becker. The invention of printing in the late 15th century transformed the literary field allowing texts to circulate much more easily for a wider audience (Rigolot, 2002). In this perspective, scholars have shown that artistic careers have shifted from a patronage or academic organization to an entrepreneurial one in line with the transformations of modern capitalist societies, when artwork became goods priced on a market (Wijnberg & Gemser, 2000). In France, the French Revolution put an end to the patronage system (Heinich, 2005), and the French Académie slowly declined (in England too, see Hoock, 2003). In the 19th century, the arts turned to a market-based organization within a capitalist society (Delacour & Leca, 2011; White & White, 1992). Market-based artistic careers were not necessarily entrepreneurial, as in the motion picture industry, where artists were first salaried in the Fordist organization of the studios (Storper, 1989). However, the growing demand for innovation and the vertical disintegration of cultural industries led to flexible careers based on project management, as in the film industry (Jones, 1996; Neale & Smith, 2013; Petit, 2012). Artistic careers became entrepreneurial not only in the film industry but also in the visual arts (Moulin, 2003) and literature, where not only authors but also editors increasingly work independently and are paid on copyright (Sapiro, 2003). In this market-based organization, the vast majority of artists navigate across organizations without secure, salaried contracts (Menger, 1999), including visual artists working with art dealers (Giuffre, 1999; Preece & Kerrigan, 2015), writers with publishers (Franssen & Kuipers, 2015), and cinema professionals with producers (Bielby & Bielby, 1999). Artistic careers are made up of sequences which are not organizational. What then can make artists move from one sequence to another?

Artistic careers and reputation

An artist's main asset is the social recognition of his or her work (Becker, 1984; Bourdieu, 1996; Delacour & Leca, 2011). This suggests that the most striking boundaries in artistic careers should be related to reputational processes: reputation is what makes artists move from one sequence to another, from debutant to consecrated artist. Using a conceptual distinction inspired by Becker (1984), Lang and Lang (1988) argued that the difference between recognition and renown shapes artistic careers: the former referring to reputation in an art world, the latter to the extension of reputation to wider social circles, in keeping with the image of concentric circles through which artists move (Bowness, 1989). Reputation is a signal of quality, a perception based on the assessment of past works (Bitektine, 2011). It is

subjective and operates only when shared by a community (Lang & Lang, 2002). It then acts as a social fact that structures artistic careers (see, in various artistic fields, Dowd & Pinheiro, 2013; Rosengren, 1985; Verboord, 2011), yielding social recognition, if not financial and even political power, as in the cases of Neruda, Zola, and Hugo (Durand, 2005). As Becker (1984) points out, success depends on artists' integration in art worlds. From 'integrated professional' to 'mavericks,' reputation results from the interaction of many actors (Becker, 1984), including those who have the power to consecrate artists (publishers, art dealers, critics, art or literary historians, etc.). Artists, therefore, do not move freely in their social spaces. Their careers depend on other actors like publishers for writers (Childress, Rawlings, & Moeran, 2017) or art dealers for visual artists, whose professional networks change when their reputations grow (Giuffre, 1999). The capacity of artists to produce a consistent abundance of work strengthens their position in art worlds, because a steady presence in artistic production keeps generating interest in an artist. It captures the attention of critics, collectors, or readers. Picasso (Sgourev, 2013), Hugo (Durand, 2005), and Andy Warhol (Hewer, Brownlie, & Kerrigan, 2013) are examples of such artists. This suggests that artistic careers may be boundaried by the nature and frequency of their interactions with instances of consecration. This is what we will now empirically test in the case of poets, trying to explore whether poets' careers are structured by such fixed patterns, and whether poets are or are not aware of these patterns.

Data and method

Empirical design: Poets' careers

We chose poetry careers not only because they are not organizational, like many in creative industries, but also because poetry is located in the pure pole of the literary field, meaning that aesthetic logics dominate economic ones, and that economic success derives from artistic recognition (Bourdieu, 1996). Unlike the visual arts (Preece & Kerrigan, 2015) or the novel (Cnossen, Dekker, & Taskin, 2017), poetry largely ignores the usual tension between art and money (Peltoniemi, 2015). Sales remain poor, with few exceptions (Author, 2006). Moreover, very few French poets have immediate commercial success as novelists, like Houellebecq (Cnossen et al., 2017). Aesthetic recognition can bring money although very late in a career (Deguy, 1986). The best-selling 20th century poet, Apollinaire, sold 213 copies of his masterwork 'Alcools' upon its release in 1913. It now sells millions. Poets' careers consist of single-contract publications with publishers or magazines, and poetry events. Poets thus have a 'professional career' (Boschetti, 2001; Craig, 2007a). They develop a reputation during their careers, do earn money from poetry (even though it is usually not enough to make a living), and publish with professional publishers. Similarly, critics, public bodies involved in poetry, and booksellers who are active in poetry are also professionals. Most poets have a second job (Craig, 2007a), often related to their literary activity, like teaching or work in the cultural sector (editors, librarians, and cultural institutions' managers). Others hold important positions as publishers or editors for literature, thus being gatekeepers (Hirsch, 1972).

Publishers are a prime instance of consecration for poets (Boschetti, 2001), who build a coherent lifetime oeuvre rather than a series of books (Vercier & Viart, 2005). As Sapiro (2019, pp. 105–107) notes, "publishers still play the key role of gatekeepers into the literary field […] Publishing with a professional and recognized publisher is indeed a condition for achieving both symbolic and professional recognition." The importance of publishers dates back to the early 19th century. Ladvocat was the major publisher of Romantics such as Hugo, Chateaubriand, and Gautier. At the time, publishing at Ladvocat was a signal of literary quality (Durand & Glinoer, 2008). This trend increased with the development of new literary publishers like Gallimard in the early 20th century, who had more economic and consecrating power than their 19th century counterparts (Simonin, 1998).[1] The dominant literary publishers have remained the same since that period (Bourdieu, 1999), widely contributing to the shaping of literary reputations (Mounin, 1962; Sapiro, 2016; Simonin, 1998). According to the rules of the Centre National du Livre (CNL, the French State agency for literature and main funding body for French writers), poets can obtain awards or publicly funded grants only if they have worked with professional publishers. Poets thus need to strengthen their collaboration with major publishers, as do artists with art dealers (Preece & Kerrigan, 2015). Are poets' careers boundaried by reputation processes, and more precisely, by poets' relationships with publishers? Can we find fixed patterns in poets' careers, and are poets aware of these patterns? Our empirical design will allow us to discuss our typology and whether reputation can act as a non-organizational career boundary.

Qualitative data and method

To answer these questions, we use qualitative and quantitative data in the case of French contemporary poets. We base our qualitative data on an in-depth exploration of abundantly available secondary sources, as poets provide numerous reflexive and biographical accounts about poetry and their own experience as poets (e.g., Collot, 2019; Deguy, 1988; Di Manno, 1998;

[1] Many publishers of the early 19th century went bankrupt (including Ladvocat), whereas Gallimard or later Le Seuil has consolidated their position in the literary field since their creation in 1909 and 1935, respectively. This fact provides evidence that (some) publishers are now stronger than they were a century ago. Gallimard's long existence is one of its key assets as a publishing house (Bourdieu, 1999).

Forest, 1995), as well as on our own insider knowledge.[2] In addition, we led 20 semi-structured interviews of poetry actors, including poets, and also booksellers and official poetry institutions, as they play an important role in poets' careers, funding both poets and publishers. We selected a range of interviewees (see the detailed list of interviews in Appendix 1) with different (1) roles in poetry (poets, publishers, editors, and booksellers) and (2) aesthetic orientations, as these are crucial in poetry, especially the 'classical' and 'experimental' divide (Collot, 2000). We used semi-structured interview guides, including open questions (McAlearney, 2006). These interviews lasted 90 min on average and took place between 2003 and 2005. We asked interviewees to develop their view of poetry and poetry careers, and to reconstruct their social trajectories (Bernard & Barbosa, 2016) in the world of poetry. Table 2 details the list of our interviewees.

We transcribed all the interviews and then coded emerging themes in each transcript, to compare answers using thematic tables. Three prominent themes arose from the interviews: the diffusion of poetry, the relative role and importance of actors (poets, publishers, and booksellers), and the social trajectories of poets.

Table 2. Interviewees

Occupation	Date
Poet	September 20, 2004
Poet, magazine editor	June 16, 2005
Poet, editor of a paperback poetry collection	February 8, 2005
Bookseller	September 9, 2003 (a)
Bookseller	September 20, 2003
Bookseller	September 9, 2003 (b)
Bookseller	December 14, 2004
Director of a state poetry institution	November 23, 2004
Poet	March 25, 2004
Ministry of Culture	October 21, 2004
Centre National du Livre Head of the Poetry and Theatre Department	April 28, 2003
Director, Regional Book Office	November 4, 2003
Poet, publisher	October 21, 2003
Poet, editor	October 19, 2005
Poet, webmaster of one of the most read poetry websites	November 15, 2004
Poet, publisher	September 6, 2005
Poet, publisher	April 5, 2004
Poet	April 23, 2004
Poet	May 17, 2005
Poet and editor	December 17, 2005

Quantitative data and method

To assess more systematically how poetry careers are structured, we use quantitative data. We first did a survey of the sales of 42 prominent contemporary poetry books published over the last 20 years and whose figures were available on the professional database Edistat.[3] These estimates of sales, widely used by professionals, enable us to draw conclusions. To determine poets' publishing patterns, we used a database of 150 French poets born between 1899 and 1970, and who have been active since 1945. We built this initial list by recording all poets in the biographical database of the two main poetry institutions (Printemps des Poètes and centre international de poésie, Marseille), to which we added those mentioned in 13 anthologies of contemporary poetry (see Appendix 1 for the list of these anthologies). After drawing up our initial list, we measured poets' reputations by building an index using a set of weighted criteria (number of books released by large, medium, and small publishers, literary awards, and number of PhD theses devoted to the author), presence in the two main contemporary monographic poetry collections, and committee membership of poetry institutions (see Appendix 1 for the detailed weighting of this index). We retained the 150 poets with the best reputation scores and collected bio-bibliographical information on them. As poetry careers are very long, some poets are old, having been born at the beginning of the 20th century but still active in the 1990s and 2000s. Note that for only 11% are literature their primary occupation. This is also true for novelists, playwrights, and poets able to make a living through workshops, readings, or grants. The vast majority have a second job, mainly in education or in the cultural sectors (editors, librarians, curators, etc.), as summarized in Figure 1.

We reconstructed their publishing careers, taking into account the type of publication (poetry, plays, essays, or fiction), publishers, publication dates, and, when applicable, coauthors. To identify their publishing trajectory, we divided publications into six categories using publisher reputation (major, midrange, and minor) and publication type (poetry or non-poetry). Our method is thus prosopographical, following leading studies in the field of literary careers (Lunden, Ekelund, & Blom, 2002; Rosengren, 1985; Sapiro, 1998). We ranked publishers in line with Bourdieu (1999), who evaluates them using 12 criteria (including turnover, distribution, size, age, literary awards, best-sellers, and location). Using the same criteria, we added a number of small, specialized publishers that Bourdieu does not include, but which play an important role in contemporary poetry. To further assess poets' reputation, we counted the number of mentions of each poet in the Modern Language

[2] One of the authors is a poet.

[3] See https://www.edistat.com/. The database is professional and not free. It provides estimated sales figures based on a panel of booksellers (including specialized cultural supermarkets such as the FNAC and supermarkets), but only since the early 2000s.

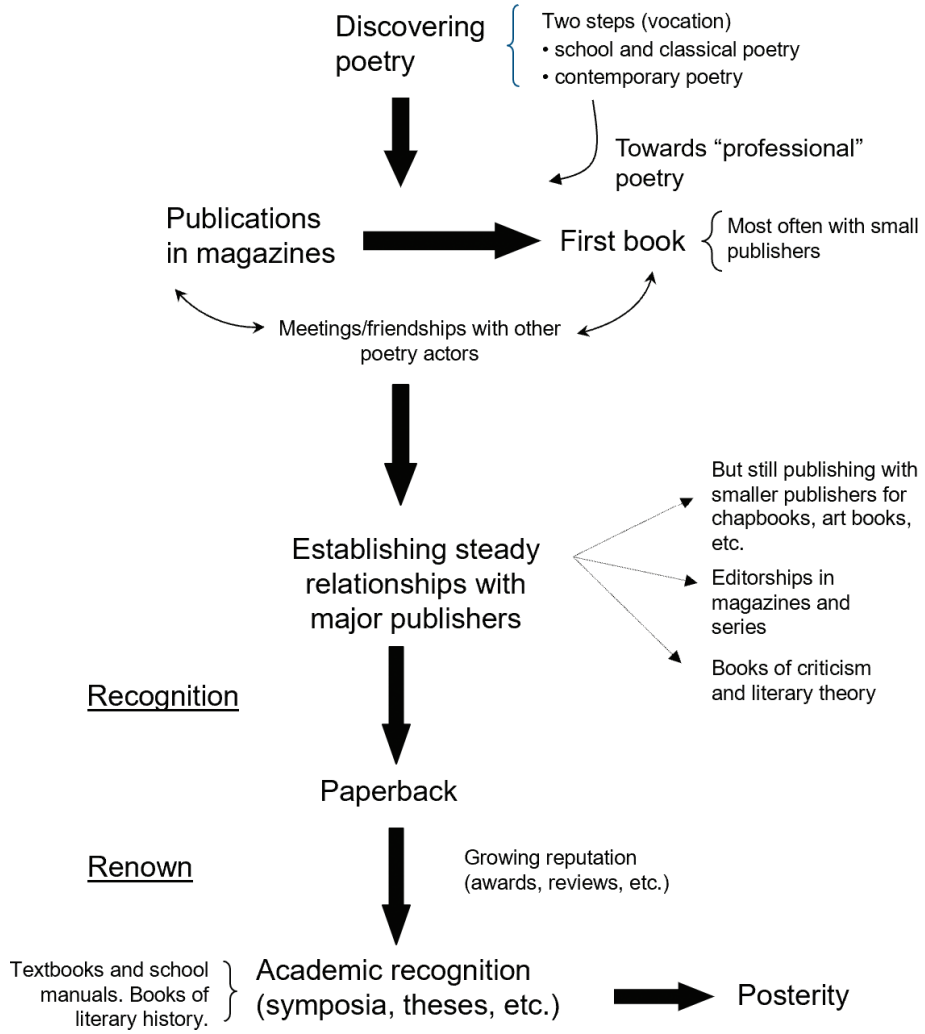

Figure 1. Second jobs of poets

Association (MLA) database, which indexes literary critiques (critical consecration), and the number of theses written or being written on the poet using the ABES (Agence Bibliographique de l'Enseignement Supérieur) database (academic consecration). Last, we recorded whether or not the poet has been awarded the most prestigious French poetry prize (*Grand Prix de la Poésie*), and whether or not the poet has been included in the most prestigious monograph series about poets (*Poètes d'aujourd'hui*).

Studying non-apparent boundaries requires quite sophisticated tools to identify patterns that are not initially obvious. Quantitative methods are more suitable to isolate fixed patterns, because it is very difficult to study large groups using qualitative methods (Higgins & Dillon, 2007) . Similarly, the quantitative indicators most often used to study fixed trajectories, such as staff turnover (Donnelly, 2008; Ituma & Simpson, 2009), are themselves too rudimentary to fully grasp the diversity of contemporary career paths. To measure the stability of the patterns that emerge from contemporary poets' trajectories, we used sequence analysis methods and, in particular, optimal matching. Indeed, as Abbott and Tsay (2000, p. 171) state, "the chief strength of optimal matching is its ability to directly measure sequence resemblance." The basic principle of optimal matching analysis (OMA) is to calculate differences between individual trajectories, in order to cluster them (Lesnard, 2006). We used the open source statistical software R, and the 'TraMineR' and 'cluster' R packages (see Appendix 2 for more details).

OMA first needs to build individual trajectories as a series of sequences, here those of poets. To do so, we reconstructed poets' publishing careers annually using the criteria suggested earlier: publishers' reputation, type of publication (poetry or fiction/essay), format (paperback/hardcover), and the pace of

publication (including silence), annually. This leads us to distinguish nine different publishing states (see Appendix 2 and Figure 2). Each year of a poet's activity corresponds to a state. The career of a poet thus consists of a succession of states: each poet can be identified by a more or less long sequence of publishing states. These sequences should reveal stable patterns in the publishing trajectories of contemporary poets. The average entropy score for their trajectories is high (see Appendix 2 for more details): on a scale of 0 (absolute trajectory stability) to 1 (completely chaotic trajectories), it is 0.527. This score indicates the irregularity of these trajectories and thus the difficulty of identifying shared, stable patterns without adequate systematic tools.

One of the goals of sequence analysis is to measure the homogeneity of the different trajectories (sequences) by creating trajectory classes or clusters. The proximity or distance between the different sequences is measured, and the sequences are then distributed to obtain the minimal distance between them within each class and the maximal distance between the classes. To make these comparisons, we need a 'centre of gravity,' a reference trajectory, within each class. To define the reference trajectory, we used the *medoid* method. It consists of identifying the sequence closest to all the other sequences in a given cluster. As Aasve, Betti, Mazzuco, and Mencarini (2007, p. 379) explain, "Medoids enable us to present results in a way that is usually reserved for qualitative studies, in which single cases are used to illuminate findings (e.g., Moen & Orrange, 2002). […] By using the medoid method, we can compute the minimum, maximum and average distances within a cluster. This is an important feature, because the dispersion tells us whether any given cluster is highly heterogeneous, or highly homogeneous. Obviously, a homogeneous cluster contains very similar sequences (i.e., similar to the ideal-typical medoid), whereas a high dispersion suggests that sequences within the cluster are heterogeneous." OMA is thus particularly appropriate for precisely measuring the variability of trajectories and for revealing stable trajectory patterns.

Findings

Poets' careers as stages shaped by reputation

There are no poetry 'schools,' unlike those so important for visual artists (Becker, 1984) and musicians (Menger, 2001). Poets engage in a poetry career after a long apprenticeship through reading and interacting with other poets or intellectuals to learn poet conventions (Craig, 2007b; Dubois, 2011). As a poet and magazine editor says:

> I started reading very young. At school A (another poet) was my closest friend […] we met again later in Paris, and launched a magazine… and yes, yes, I had two teachers, including first Mr. Paul X in [a small provincial town in the Alps]. I studied modern literature and I wanted to be a writer. Or musician. After, a little more realistic with age, I wanted to be publisher or journalist. But always a writer (interview, June 6, 2005).

Other interviews as well as poets' biographical accounts (Stéfan, 2005) tell similar stories, to the extent that one poet and editor, speaking of the role first of professors and later of a famous poet who introduced him in the poetry world, say "To get back to your question, my beginnings in writing are so

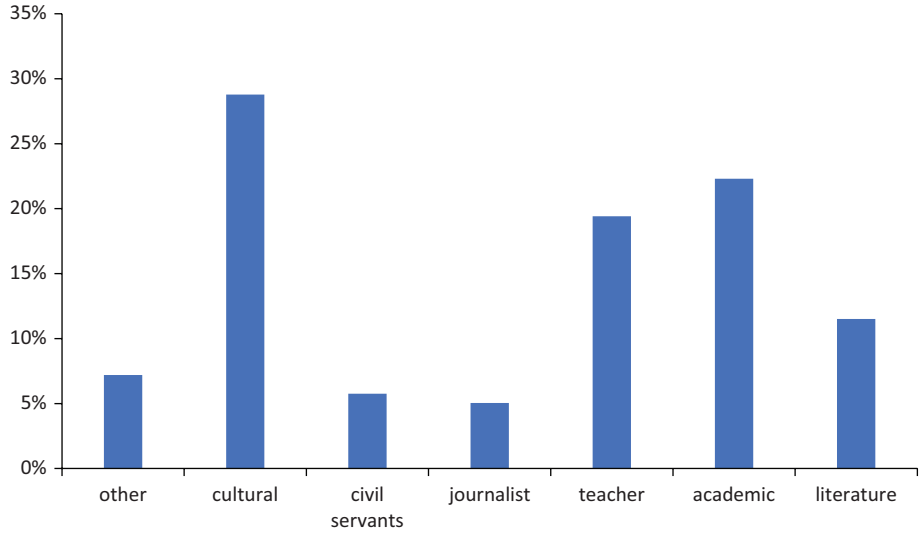

Figure 2. State distribution among the OMA classes of poets

dull they'd make you weep" (interview, poet and editor, February 8, 2005). As literary magazines represent a smaller investment than a book; poets generally start by publishing in magazines, as this poet and webmaster acknowledges, explaining how it was 'vital' for him to be published in one of the leading experimental poetry magazines in the early 1970s (interview, November 15, 2004). For the same reason, their first book tends to be with a small publisher, who will take risks that major publishers would be reluctant to take (Simonin, 1998). The best reputed poets from our database, like Roubaud, Deguy, Bonnefoy and Jaccottet, were taken on by small publishers for their first books, before being published by major publishers such as Gallimard or Le Seuil. Only 19.8% of poets from our sample published their first book of poetry with a major publisher.

The average age of first publication illustrates these steps. Poets reach their first printing with a major publisher on average at the age of 39 years old. One very important step is to publish in paperback, which will sell much better. Our survey of prominent contemporary poetry books shows that paperback editions sell 15,098 copies on average, peaking at 163,172, whereas standard editions sell 1,673 copies on average, peaking at 2,098.[4] When poets are published in a paperback collection, their reputation rises and they are likely to be offered more opportunities, illustrating how the Matthew effect (Merton, 1968) also operates in poetry. Sales are boosted by renown, notably by inclusion in academic programs, as in the case of Bonnefoy and Jaccottet, the only two contemporary poets (now over 90) to have sold more than 80,000 copies, both of them in paperback. Interestingly, writers known first as novelists who have also published poems sell less in poetry than consecrated poets do. Houellebecq is such an example: his sales remain notably inferior to those of Bonnefoy and Jaccottet.[5] Paperback books have much better distribution, as the editor of a paperback series states:

> That's precisely the role of this collection. It takes an author and gives him a certain audience. If it's to sell 1,200 copies, he can do that with Mercure [a smaller publisher and a subsidiary of Gallimard]. If it's to sell 1,700 copies in paperback, it makes no sense. Once again, I'm not obsessed with the numbers. I'm obsessed with the efficiency of including given contemporary authors in this collection (interview, February 8, 2005).

Paperback publication tends to happen late in a career. Jaccottet and Bonnefoy were the youngest to publish in paperback, at ages 46 and 47, respectively. In our sample, the average age of publication in paperback is 60 years old. The other very prestigious series is *La Pléiade* (Gallimard). It is known as the 'Rolls Royce' of the French book market and has published since 1939, only 14 writers during their lifetime, including three poets born after 1900, namely, Char, Perse, and Jaccottet. They were all older than 75 at the time of printing. This also means that publishers have a financial interest in supporting (for a relatively small investment) poets whose work might be profitable when they enter the literary pantheon, like Perse or Char for Gallimard. Academic consecration is crucial and comes very late, as the education system tends to be conservative and includes few living poets (Maulpoix, 2001). In our sample, the first PhD thesis on a poet's work happens on average at the age of 68. This sketch of poets' careers can be summed up as sequences across various stages corresponding to the rise in reputation (see Figure 3), emphasizing the role of publishers.

Figure 3 illustrates that poets' careers are not unstructured, but instead are boundaried. Publishing a first book, having a first book at a major publisher and later in paperback are stages structuring poetry careers, and act as a boundary. Indeed, poets then hold a new position: that of a poet published at a professional publisher for the first time making him a 'professional' poet (Craig, 2007a), or later that of a poet published in paperback. Each of these steps corresponds to new associations with publishers, and to a rise in poets' reputation. Their relationships with publishers are thus crucial, from small to major publishers and those with paperback collections. Indeed, publishing trajectories are punctuated by awards, criticism, and academic consecration. However, the only long-term professional relations poets may have this with publishers. Awards are one-time events. Poetry magazines remain confidential and often ephemeral (Gleize, 2003). Readings are opportunities for poets, but do not lead to long-term engagements with any organization (Craig & Dubois, 2010). The reputation of a publisher acts as a signal of literary quality (Franssen, 2015), and publishing books remains the main way to build reputation, even when poets do a lot of readings, as the following poet acknowledges:

> Well, if a book can bring you a €300 advance and if it is a little visible, I don't have too much to complain about. I always get some press, some publicity … and that can bring you 15, 20, maybe 30 readings. But then a reading, on the other hand, will pay between €200 and €500. So, the book itself is a loss leader, to speak like marketers … [one of his books] brought me much, much more. The anthology: enormously, along with conferences (interview, poet and magazine editor, September 20, 2004).

This means that if we were to find fixed patterns in poets' careers, these must be structured first by their relationships with publishers. Four criteria shape the relationships between poets and publishers, and thus poets' careers: (1) the publisher's reputation, (2) the series in which the book is published

[4] Edistat database.

[5] According to the professional Edistat database, Houellebecq's volume of poetry in the poetry paperback series Poésie Gallimard sold around 13,000 copies, whereas Bonnefoy and Jaccottet have sold respectively more than 150,000 copies and more than 80,000 copies in the same series.

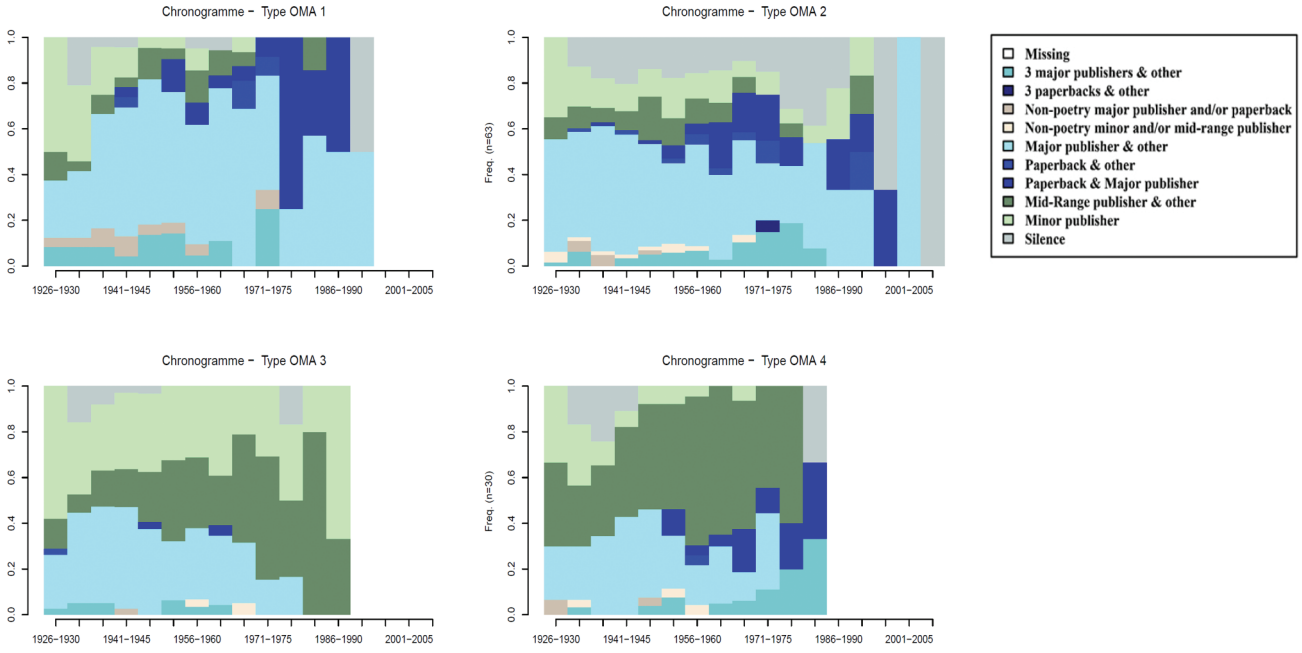

Figure 3. The 'ideal' career of a consecrated poet

(paperback or standard), (3) the literary genre (poetry, essay, and fiction), and (4) the rate of publication.

Fixed patterns in poets' careers

Our OMA results show that poets' careers do follow fixed patterns, with publishers acting as a boundary. Poets' trajectories cluster into four classes (Figure 2). Four typical career patterns emerge from our data structured around poets' relations with publishers. These four classes are only moderately dispersed around the medoid. The average distance from the medoid in each class is 1.5–2.5 times less than the average distance between the trajectories in the whole population (which is 0.44) and, in three out of four cases, the maximum distance from the medoid is approximately the same as the average distance between trajectories within the overall population (Table 3). In addition, again in three out of four cases, more than 80% of the trajectories in a given class are closer to the medoid of their class than to that of another class. Within each class, we find a stable pattern, which acts as a focal point – around which the trajectories of a given class converge to greater or lesser degrees – rather than as a mandatory sequence that poets must follow.

The chronograms demonstrate that Types 1 and 2 poets spend much more time with major publishers and paperback publications than Types 3 and 4. Type 1 stands out from the others due to the length of time spent in the 'major publisher' state. The length of time spent in the paperback state also differentiates Type 1 from the others (see Table 4).

Table 3. Distance from medoids

	All	Class 1	Class 2	Class 3	Class 4
Class size*	150	33	41	58	18
Average distance from medoid, intra-class	0.31	0.19	0.28	0.28	0.3
Maximal distance from medoid, intra-class	0.71	0.4	0.47	0.45	0.53
% of closest medoids from other classes	0.27	0.15	0.15	0.5	0.11

*All tests: $p < 0.05$

Table 4. Average time spent in each state

	All	Class 1	Class 2	Class 3	Class 4
Minor	6.27	3.54*	5.36	9.03*	4.44*
Midrange	4.1	2.87*	4.34	5.5*	1.1*
Major	6.08	4.27*	8.3*	5.2	18.7*
Paperback	0.6	0.18*	0.85	0.18*	2.11*
Silence	23.34	10.51*	29.13*	20.25*	43.6*

*The *p*-value from the two-tailed Student significance test is 0.05.

In this Type 1 class, dominant positions either predominate in absolute terms (major publisher) or feature more than in other classes (paperback). Type 2 is close to Type 1, but with the important difference that Type 2 poets are often more silent than Type 1. All the poets who publish most in the paperback cluster in Type 1. Types 1 and 2 poets have regularly produced essays and novels, most often published by major publishers. Type 2 includes poets also consecrated as novelists (Houellebecq, Pérec, Butor, and Sabatier). Type 4 poets

Table 5. OMA paths and consecration

	Type OMA 1	Type OMA 2	Type OMA 3	Type OMA 4	Mean	Standard dev.
Grand prix (%)	20.83	4.76	5.26	10.00	8.39	–
Monography (%)	41.67	20.97	2.63	13.33	18.18	–
Theses (av.)	6.92	4.98	0.52	2.40	3.69	9.79
Reviews (av.)	52.38	60.55	5.26	18.56	37.10	113.08
Age at first publication with a major publisher	37.96	39.15	39.95	40.50	39.10	11.56
Age at first paperback	57.42	64.83	73.14	59.13	60.30	12.48
Age when first the subject of a thesis	65.93	72.04	67.57	68.54	68.00	10.77

spend more time with midrange publishers than Type 3 poets, who focus on minor publishers; Type 4 poets also have more access to major publishers and paperback publications. Our results confirm that similarly reputed poets tend to follow similar career paths. Poets' relations with publishers separate them into different social groups (Langley et al., 2019) of unequal reputation. An interesting result is that poets even when highly reputed continue working with small publishers, especially for poetry booklets or art books (with visual artists). Poetry careers are not linear, and this may explain why they are difficult to grasp. This is different from visual artists, whose professional networks change when their reputation grows (Giuffre, 1999), and from film professionals, whose reputation depends on their latest successes or failures (Bielby & Bielby, 1999). In poetry, art books may represent an important source of income (Leclair, 2007), as art books are much more highly priced than standard editions. Furthermore, poets often publish their work in the format of small books, in which they can test new ideas or forms. Major publishers tend to take these on only later, once they can aggregate several small books into a larger edition that better suits their publishing expectations.

Fixed patterns and other sources of reputation

To further explore how these fixed patterns structure poets' careers, we compared our OMA types with the number of theses written (or currently being written) on poets' work, the number of reviews, whether or not they have been awarded the *Grand Prix de Poésie* and are included in the poetry monograph series, *Poètes d'aujourd'hui*. We also detail per cluster the average age of first publication at a major publisher, first publication in paperback and first thesis on their work. We present these results in Table 4.

Results clearly show that poets' fixed patterns correspond to different levels of reputation. They correspond not only to publishers and publishers' reputation but also to other main sources of reputation such as awards, reviews, and academic recognition. Furthermore, these patterns include time, as Type 1 poets reach reviews and academic consecration earlier than others, with the relative exception of Type 4 poets. A closer look at our OMA clusters reveals that these fixed patterns correspond to different groups of poets, including publishing patterns, consecration but also genre and productivity. This career boundary separates poets into different social groups (Langley et al., 2019).

The Type 1 poet career corresponds to the 'ideal' career of the consecrated poet pictured earlier. Type 1 poets receive earlier and more academic and critical attention. Publishing trajectories coincide with one-time instances of consecration like academia, awards, and critical acclaim; in fact, all instances of consecration converge toward the same names. They publish with major publishers or in paperback at a 'young' age, which suggests that while the process is very long, most consecrated poets start to gain social recognition earlier than others do. This could be analyzed as another example of the Matthew effect (Merton, 1968) often observed in the arts (Menger, 2014). Jaccottet, Bonnefoy, and Roubaud are examples in kind, having accumulated all the signs of consecration, and published steadily with the best-reputed publishers (Gallimard and Le Seuil). Jaccottet is the only living poet to publish in the most prestigious French series, *La Pléiade*. Type 1 includes major theorists. Indeed, the ability to theorize poetic writing has been decisive since literary modernity (Friedrich, 1999). The focus on innovation and the preeminence of aesthetics over economics explain the importance of theory and poetics in poetry (Boschetti, 2001). Poets have to situate themselves vis-à-vis other poets and existing aesthetics, and thus explain their aesthetic positions not only to peers but also to critics or even to publishers who have their own aesthetic identities. As Baudelaire, one of the founding fathers of French modern poetry, famously said, "the poet is the best critic." All major poets from the past (Hugo, Baudelaire, Mallarmé, Apollinaire, the Surrealists, etc.) and the present times (e.g., Bonnefoy, 1995; Jaccottet, 2015; Roubaud, 1978, 1995) wrote major theoretical and critical essays about poetry. This is not the case of novelists, who are not expected to produce such theoretical works, especially those situated on the commercial pole of the literary field (Bourdieu, 1996).

Type 2 comprises somewhat less reputed poets. The cluster 'benefits' from the presence of 'novelists' who have received much attention, especially from critics (and academics, to a lesser extent), confirming that critics pay more attention to the novel than to poetry, which poets often bemoan. If we remove 'novelists,' the average numbers of theses and MLA mentions fall to 2.1 and 18.42, respectively. Others, like Ponge, though consecrated, have produced quite a meagre corpus, with longer periods of silence. Types 3 and 4 include less reputed poets, who spend less time in dominant publishing states, especially Type 3. Type 4 includes few poets having published regularly with major publishers (Réda, Noël), but mostly with minor ones. Their publishing trajectory is similar to that of less reputed poets in that they work mostly with midrange and minor publishers, but also have major publications, including paperbacks. They are consecrated poets, which explains that the average paperback age is close to Type 1. Indeed, Type 4 includes few poets published in paperback – the aforementioned Réda and Noël – and the only two poets in paperback without having a steady relationship with major publishers. Also, in this cluster, we find the best-known 'experimental poets' (Heidsieck, Blaine, and Chopin) who, though they have no major or paperback publications, still enjoy recognition within the world of poetry. Some, like Heidsieck, have been awarded the *Grand Prix*. This confirms the importance of conventions in reputation-making (Becker, 1984) as 'experimental' poetry breaks radically with the most widespread poetry conventions. Importantly, not all major publishers are equally important in shaping reputation: very few poets working with Flammarion have paperback publications, as Flammarion, unlike Gallimard, does not publish contemporary poetry in paperback. Though irregular, poetry careers are ordered and are composed of several steps. We see that these ordered steps do not happen for all poets in the same way, which flesh out more fully the idea of fixed patterns.

Academic consecration is especially important as the education system passes on the literary heritage to new generations and shapes the pantheon, particularly in France, where literature has played a key role in the making of the French State, the republican ideology, and its embodiment (Vaillant, 2017). The involvement of poets in the education system is thus important. Many prominent poets (Deguy, Bonnefoy, Roubaud, and Maulpoix) lead a two-sided 'academia/poetry' career, which is important, in that they can disseminate knowledge about poetry and encourage academic work on contemporary poetry (i.e., PhDs and symposia). However, very few creative writing programs exist in France.[6] French poets working in universities do not teach literary creation, but literary history, unlike in the United States (Spiro, 2004).

The subjective dimension of poets' careers: Individual, shared, or collective awareness?

If poets' careers follow fixed career patterns, to what extent are they aware of these career patterns? This was the second, subjective, dimension of our career boundary definition. In our case, the question is twofold. Are poetry actors aware that publishers shape poetry careers? Are they aware that silence, i.e., the rate of publication, structures poets' careers?

Our interviews and secondary data establish that poets are fully aware of the importance of publishers. Poets make this explicit in their accounts (e.g., Deguy, 1986; Maulpoix, 2001; Roubaud, 1995). For instance, Deguy (1988), one of the best reputed poets, criticized major publishers for not sufficiently considering poetry, insisting on the major publishers' power of literary consecration. Of our 20 interviewees, 18 mentioned the role of publishers and 16 evoked the hierarchy between these publishers. Poets insist more on reputation making, while booksellers insist more on distribution and reader recognition. This awareness impacts poets' career strategies. Poets know how important it is to strengthen their relationship with a big publisher, and that this eases later paperback publications. Jude Stéfan (2005) narrates how important his Gallimard editor, Georges Lambrichs, was in assembling around him and his *Les Cahiers du Chemin* series a group of poets (Stéfan, Deguy, Réda, Macé, Perros, and Janvier, all now published in the Gallimard paperback series). This is why prominent poets have established long-term relations with reputed publishers, as our data reveals. Examples include Ray, Jaccottet, and Bonnefoy with Gallimard; Roubaud, Pleynet, and Roche with Le Seuil; Deluy, Di Manno, and Rossi with Flammarion; and Fourcade, Hocquard, and Boyer with POL. Jaccottet's letter to Gaston Gallimard demonstrates to what extent he is, like our interviewee, aware of Gallimard's standing in poetry, and more specifically, its paperback series. This letter demonstrates his esteem of publishing in the series, resulting from his long-standing relationship with Gallimard:

> Nothing could please me more than publishing a selection of poems in the series. I have already made a first choice, covering the three books published by Gallimard, and ending with *Leçons*. It would be a volume of poetry 1946–1966.[7]

Editors also emphasize the role of publishers in poets' careers. The editor of the most-read poetry website pays homage to poet Marie-Claire Bancquart, who died recently, insisting

[6] Creative writing programs started very recently in France, following the US model. There are currently eight academic creative writing programs in France (Bedecarré, 2017).

[7] Philippe Jaccottet, "Letter to Gallimard," November 28, 1968. The book would be published in 1971.

again on the consecration of a publication in Poésie/Gallimard, the Gallimard poetry paperback series:

> Poezibao learned last night with deep sadness the death of Marie-Claire Bancquart. She leaves behind considerable poetic and critical work, to which Poezibao will return soon. She had just received, at last, the much-awaited consecration of a publication in Poésie/Gallimard.[8]

The editor of POL (Paul Otchakovski-Laurens, who died recently) explained how important it was to follow a poet over his career (see Centre international de poésie Marseille, 1992) as only time can be a source of reputation and money, as much for publishers as for poets. Gallimard has historically bet on the long term (Assouline, 2006). It is also a way to reduce risk, as a publisher needs to sell more in paperback than in hardback to be profitable. One editor of a paperback poetry series stresses that a certain number of hardback publications and critical acclaim are required before moving on to paperbacks: "in fact, for a poet to be published here [in paperback], he or she would have to have published at least one book with a print run of 2000 copies [in hardback, with a major publisher]" (interview, February 8, 2005). Poets are aware of this 'rule.' A poet emphasizes the impact of Gallimard's paperback series and decries its overly classical bent. His comment insists on publishers' aesthetic identity, which we will come back to later:

> That said, there could be a bias. Gallimard's *Poésie* collection is indeed omnipresent – it's the major distribution channel for poetry in France – and it has an idea, which I'd say is blinkered, of what is contemporary. They only see one school, one trend. Especially when you consider that they don't publish three winners of the *Grand Prix National de Poésie* [the most prestigious poetry prize in France]. It's almost unfair, as regards … except for Bernard Heidsieck, these poets are hardly revolutionary … Fourcade really follows in the wake of Char, and Tortel is frankly no great innovator either (interview, September 20, 2004).

Those mentioned here as new or potential poets for the Gallimard paperback series, however, are already established with major publishers, with the exception of Heidsieck.

Poets are not the only actors to be so alert to publishers. It is also the case of both critics and booksellers. When Jaccottet published in *La Pléiade* in 2014, the event triggered the publication of 65 articles in 2 months, all insisting on Jaccottet's consecration. It was extraordinary attention for a poet in the French general press. Similarly, booksellers are aware of the importance of publishers. They, too, use publishers to understand the shifting sands of contemporary poetry. Publishers' reputations directly affect sales, and it is easier for booksellers to work with major publishers that readers know better. As this Parisian bookseller indicates:

> I would love there to be a diverse poetry section in every bookstore, and not just a Gallimard paperback poetry stand, hidden away in some corner, with their collection in alphabetical order … It's easy to work with Gallimard, with other publishers it's not so much the case, and I'd like it to be that simple with all publishers.

The role of publishers in the poetry field is all the more structuring since the hierarchy of publishers is highly stable, major publishers having remained the same since at least World War II, like many midrange publishers (Bourdieu, 1999).

Another reason why poetry actors use publishers to evaluate poets is that publishing here or there is also an aesthetic signal. Gallimard publishes more classic 'lyrical' poetry. The poet cited earlier decried not only the power of Gallimard in the poetry economy but also its 'blinkered idea' of poetry. Gallimard subsidiary POL seeks more 'experimental' work (Guillaume, 2003). Le Seuil has published avant-garde poets (Pleynet, Roche, and Faye), and Flammarion publishes more formalist poets, as its editor claims (Di Manno, 1998). A distinguishing aesthetic is true for smaller publishers also: Arfuyen specializes in spiritual poetry, Champ Vallon in lyrical poetry, while Al Dante publishes 'experimental' poetry, such as sound poetry. This distinctive signaling enables poetry actors to situate poets' trajectories not only in terms of reputation but also in terms of aesthetics. In addition, editors are also very often poets, who express themselves publicly in books and in the press, making clear their aesthetic orientation, which other poetry actors can easily observe through publishers' lists. Poets have a deep knowledge of their field and its history. This knowledge includes the weight and the specific orientations of publishers.

The question remains whether this awareness of the impact of publishers on poetry careers is *shared* or *collective*. The publisher's role in defining poets' trajectories is not institutionalized, as *collective* awareness would require. No rule or collective entity (regulation, professional association, and trade union) and no institutionalized professional ethics organize poetry careers, as Sapiro (2019) notes. Whilst publishers apply certain criteria to the order of publication (hardback before paperback, for example), these rules are neither systematic nor institutionalized. The choice remains that of the publishers. Association with publishers is a shared boundary, combining fixed patterns and shared awareness.

The fact that poets remain silent for several years or, on the contrary, are prolific is not a decisive feature in assessing their activity. Our interviewees never mention the pace of publication, nor its potential impact on careers and reputation. Only 2 of the 65 articles written after Jaccottet's publication in *La Pléiade* mention that Jaccottet is a prolific author, and none point out that at the beginning of his career, he remained silent for 10 years. Poetry actors are rarely aware that silence shapes poetry careers. On the other hand, some poets were mindful of this fact, like Ponge, who thought that his late recognition

[8] https://poezibao.typepad.com/poezibao/2019/02/disparition-marie-claire-bancquart.html.

was partly due to his slow pace of publication, and that he had to publish more regularly (Doga, 2016). Silence is an unknown boundary, with fixed patterns but individual awareness.

Discussion

We found only two types of boundaries from our typology in the case of French poets. Throughout history, modern societies have witnessed an increasing division of labor (Weber, 1978). Social worlds are now organized around specific characteristics that shape careers (Becker, 1984). It would thus have been very surprising to find all the boundary types our concept offers within the same social world. For instance, we would not find any organization-based boundary in poets' careers. Similarly, they neither rest on any specific training nor institutional credentials unlike lawyers or physicians; no professional organization has endeavored to organize poets' careers. This makes it impossible to find an institutionalized boundary in the case of poets. The case of poets suggests that we are unlikely to find all boundary types in a single case. Our typology rather helps to grasp very different cases as we will discuss in the next sections, using our findings as well as examples from the literature to illustrate its capacity to approach a wide range of different forms of careers in different contexts. We discuss first the two boundary types we found in the case of poets, before briefly discussing the three other types with examples. We recall that one of our boundary types, labeled incoherent (no fixed patterns and collective awareness), does not exist in the social world.

Shared boundaries

Shared boundaries combine fixed patterns with shared awareness. Publishers, and their reputation, represent a shared boundary in the case of poets. Why is this so? What matters in poetry is reputation, which can yield profits much later. If we exclude poetry magazines, which remain confidential, publishers are the first to select poets, and in doing so, send the first strong reputation signal to other poetry actors, including readers. Paperback publication is important because, in addition to a strong signal of quality, it makes a poet's work easily accessible, especially for students. This encourages academics and teachers to include poets published in paperback in their curricula (Maulpoix, 2001), and we have seen the extent to which academic consecration is decisive in poets' careers. Critics, also, pay much attention at which publisher a book is published (Boschetti, 2001; Cerisier, 2009). The reputation of publishers therefore counts for a great deal, all the more, so because the hierarchy of publishers is not likely to change with the dominance of 'old' and established literary publishers (Bourdieu, 1999). However, this is not set in stone. Before the 19th century, publishers had little impact on poets' careers as they were initially local booksellers publishing books on a small scale (Viala, 1985).

Many types of careers follow fixed patterns, even though these patterns are not institutionalized, from modern artists (Braden, 2009; Wijnberg & Gemser, 2000) to engineers and ICT workers (Ituma & Simpson, 2009). When these fixed patterns are easily observable, actors become aware of them through professional socialization. This is the case of organizational careers, when people are aware of the rules that govern promotion in their organization (Wilensky, 1961). Such careers have not disappeared (Bagdadli & Gianecchini, 2018; Lips-Wiersma & Hall, 2007), as in accounting firms (Lupu, 2012) and multinationals (Zhao & Zhou, 2013).

Unknown boundary

Unknown boundaries combine fixed patterns and individual awareness. In the case of poets, silence is an unknown boundary, and this may be surprising. The most renowned poets (Bonnefoy, Jaccottet, and Roubaud) have been prolific. However, poets' lack of awareness of the role of silence in poetry careers can be explained by the fact that they gain their reputation only over the very long term, unlike in commercial literary creation, where artworks can provide immediate success, like for Zadie Smith (Pouly, 2016). The case of poets is different. A poet is consecrated for his whole career over the long term rather than for a single book (Boschetti, 2001). In this regard, the case of poets is also different from that of visual artists, whose work has a value as a unique artefact (Moulin, 1994). Another reason explaining why poets are not aware of the role of silence is that books do not provide poets with much money. There is much less incentive to publish regularly, unlike novelists living by their pen. Publishing more or fewer books only loosely impacts the material life of poets, who often have less time for artistic creation because of their second jobs.

Unknown boundaries may be common when individuals ignore which rules govern their social worlds, as critical sociology or management research has emphasized (Alvesson, Bridgman, & Willmott, 2009; Bourdieu, 1995). For instance, we can understand gender as an unknown boundary (Bamberger, Admati-Dvir, & Harel, 1995; Biemann et al., 2012). In this case, they have long been unknown (and maybe still are) because they are illegitimate. This is the case for the 'mommy track' in legal professions (Hagan et al., 1991) : gender shapes women's careers in these fields much more than official rules, but actors are unaware of it. Another example is that of French company directors. François and Lemercier (2014a, 2014b) have shown that directors in the biggest French firms share the same very narrow background, showing that these careers are strongly socially boundaried. They studied managers sitting on two or more boards of directors in the 120 biggest companies on the Paris stock exchange. Seventy-nine percent come from the upper classes (entrepreneurs, liberal professions, top managers, etc.). In 2009, less than 10% had not graduated from a Grande

Ecole (the best reputed French higher education institutions), and 66% had graduated from the Ecole Polytechnique, Sciences-Po, and/or the Ecole Nationale d'Administration, which together award less than 500 degrees a year. This last figure contrasts with the total number of French students, 2.3 million, and emphasizes the weight of social capital in shaping careers (Bourdieu, 1980). However, the fact that the path to top management positions in larger French firms is so narrow and remains largely unknown, even among French executives (François & Lemercier, 2014a).

Other boundary types

In the last part of this section, we briefly discuss the three remaining cases of our typology: the institutionalized boundary, the symbolic boundary, and the proto-boundary. Institutionalized boundaries combine fixed patterns and collective awareness. This is the case of professions organized according to institutionalized rules, such as academia or the legal and medical professions; there are fixed patterns (tenure, choice of specialization after an examination) which individuals cannot ignore. Quite often, this institutionalization involves professionals themselves, as in the case of academics (Bedeian et al., 2010), pharmacists (Rodrigues et al., 2016) and lawyers (Karpik, 1995). It was also the case in the arts when artists' careers were regimented by the French Académie (Heinich, 1983), suggesting once again that career boundaries may radically change. Such boundaries structure intellectual professions and expert labor especially (Abbott, 1988).

Proto-boundaries occur when some actors (but not all) believe that certain fixed patterns – based on a specific boundary – structure careers, despite the fact that this boundary does not organize careers. We draw the concept from Abbott (1995b). This happens because actors have no access to the relevant information, or even because profound changes make many of them unaware of the boundaries structuring their professional world. The end of the permanent employment system in Japan provides a good example (Ahmadjian & Robinson, 2001). In the case of artistic careers, many amateur writers think that launching a career means publishing a book even through self-publishing (Mouaci, 2001), whereas we have shown that poetry careers depend on which publisher a poet works with. Self-publication is a dead end, as these publishers do not provide amateurs with reputation: it is a handicap rather than an asset. To know this, one has to be part of the poetry world. Another case is that of lawyers. For many years, lawyers' careers were structured in two main steps: lawyers first worked for a legal practice[9] before becoming partners or founding their own practice with colleagues (Karpik, 1995). Some lawyers still follow this career model, whereas increasingly lawyers spend their whole careers working for different practices, either freelance or as employees. The market and the organization of the profession are changing (Bessy, 2010), with larger practices reluctant to offer partnerships to newcomers and preferring to hire well-paid, highly specialized lawyers (Haeri, 2017). In other words, the boundary is not where some actors think it is (the status of employee or partner and the income pertaining to that status), but rather between different modes of professional organization, which largely overlap the geographical boundary between Paris, the provinces, and the legal domains (business law or family law, for instance). This false perception remains individual: not all lawyers share this view, which will depend on their own professional trajectory and their knowledge of the profession.

Symbolic boundaries are close to proto-boundaries, but the false perception actors have not individual but shared. It may happen when boundaries contradict common views, or when individuals have few possibilities to get information about their social world. For instance, Bourdieu and Passeron (1964) famously argued that the correlation between social class, academic success, and professional achievement is ignored though it shapes careers, because it contradicts the meritocracy ideology and the supposed social role of the education system. It can also occur when a professional identity is particularly strong, career structure being considered a key feature of this identity. Architects face a similar situation to lawyers. They also see their career as a progression from employee to entrepreneur, whereas the job market is changing. But as Chadoin (2007) has shown, they have less knowledge of their social world, probably because architecture is not as formally organized as the legal profession, and unlike for architects, bar associations produce a lot of information and are also responsible for training.

Conclusion

The contributions of this article are twofold. First, we offer a concept of career boundary based on fixed patterns and actor awareness, which fully integrates the objective and subjective dimensions of careers. It leads to a five-case typology of career boundaries, which enables us to search for boundaries in various social settings, theoretically and empirically. Second, we tested this framework on the case of artistic careers and found that they are boundaried by reputation. Poets' relations with publishers, which are instances of consecration, structure their careers and chances of success. Similarly, reputed poets tend to follow similar career patterns. We thus investigate another type of non-organizational career boundary, namely, reputation. As Becker (1984) notes, careers sum up the organization of a social world, and the impact of reputation on artistic careers mirrors that of social recognition on artistic fields. It may

[9] In France, lawyers start their career working under the specific status of 'collaborateur,' being hired by a practice as an independent worker, having, in theory at least, and in addition to their work in the practice, the opportunity to develop their own clientele.

extend beyond the case of artistic careers as reputation is one of the main assets of workers in many other fields (Bar-Isaac & Deb, 2014; Blickle, Schütte, & Wihler, 2018), including among others professions in the Anglo-Saxon sense, such as law, medicine, and psychology (Abbott, 1988), consultancy (Lupu, 2012), and academia (Bedeian & Feild, 1980). We found two out of our five types of career boundaries, which are not surprising given the diversity and complexity of modern societies: other types of career boundaries may be identified in other social contexts. This article thus contributes both to the literature on careers and on creative industries.

Our work questions the boundaryless argument (see Budtz-Jørgensen et al., 2019; Rodrigues & Guest, 2014b) on a new basis: we tend to conclude that careers are boundaryless because we have not searched for boundaries where there are. For instance, we may have searched in a given setting for organizational career boundaries and found none. But this does not mean that there are no other boundaries shaping careers in this specific setting. The case of artists here is illuminating. Their careers are boundaried by the most salient characteristic of creative fields, reputation (Becker, 1984; Lang & Lang, 1988), but not by the intra- or interorganizational boundaries, which are the most visible.

To conclude, we suggest that the most common career boundary types are likely to be the institutionalized, shared, and unknown ones. Institutionalized boundaries concern first 'the professions,' as American sociology has defined them, further suggesting that, increasingly, social activities are professionally organized (Abbott, 1988). Of course, institutionalized rules hardly regulate all occupations. If fixed patterns structure careers though they are not subjected to institutionalized rules, the question is whether actors are aware of these patterns or not. We might suppose that quite often they are, because of professional socialization, which contributes to career success (Anderson-Gough, 2018; Grima & Glaymann, 2012). However, this is not always true. Actors may well not be aware – or may be only partially aware – of the rules of their social world, as critical sociology and critical management have long insisted (Bourdieu, 1978; Clegg, 1981; Foucault, 2004), suggesting that unknown boundaries may also be quite common. This may happen, especially, when social domination processes impact career development, such as race or gender (Castilla, 2008). These suggestions open directions for future research to explore which kinds of boundaries shape careers in other social settings. We have provided the theoretical and methodological apparatus to lead such exploration.

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Appendices 1-2

M@n@gement

ORIGINAL RESEARCH ARTICLE

Visual Maps for Process Research: Displaying the Invisible

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Abstract

In this article, we present visual maps as a way of visually representing qualitative data to improve rigor and analysis in process research. Visual representation of data is an essential element of scientific discourse, and historically scholars have put a great deal of effort into finding creative and efficient ways of visually representing quantitative data. Nevertheless, despite endeavors to integrate visual methods into organizational and management research, qualitative research still lacks a conceptual grounding of the ontological status of visual representation as well as effective tools to visually display data. We contribute to filling these gaps and start a discussion on qualitative data visualization by proposing Latour's concept of *inscription* as a conceptual framework and the use of visual maps as a methodological tool for qualitative process research. We provide an analytical example of how visual mapping could become a methodological tool that enables recognizing patterns, condensing data, and comparing and examining relationships over time that are not necessarily visible independently of their representations. This also enables researchers to make sense of data, improve analysis, and theorize, thus fostering reflexive thinking and facilitating communication.

Keywords: *Visual mapping; Data visualization; Inscriptions; Process research; Reflexivity*

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Process research focuses on phenomena evolving over time in a particular context. It demands longitudinal inquiry and the analysis of elements that emerge, change, and unfold over time, or 'process data' (Langley, 1999; Langley, Smallman, Tsoukas, & Van de Ven, 2013; Welch & Paavilainen-Mäntymäki, 2014). In order to guarantee rigor, scholars who conduct process research have to face some very specific challenges often linked to the lack of methodologic tools to condensate, make sense, and report data, which hinder the researcher's ability to create visual interpretation and be reflexive during the analysis and interpretation process. Even though there is increased effort during the past few decades toward methodological improvements in process research, we still have little guidance from the literature on how to overcome such hurdles (Berends & Deken, 2019).

In this article, we propose the use of visual maps (as first presented and used by Langley, 1999), ontologically conceived as *inscriptions,* as a structured methodological tool to surpass these problems faced by process scholars when conducting process inquiry. We position our contribution in the large discussion of data visualization in qualitative research, which refers to understanding and communicating data through visual displays (Myatt & Johnson, 2009).

The use of visual inscriptions as a means to bring more rigor to qualitative research has drawn the attention of qualitative scholars in the 2010s mainly due to the increasing discussion of visual methods in organizational research. Bansal and Corley (2012), for instance, suggest that qualitative researchers must think creatively about displaying their data. They draw attention to the fact that in qualitative research "data must be shown, not merely described" (Bansal & Corley 2012, p. 511) to allow the reader to see a clear connection between the raw data and the analyzed data and, thereby, "transport the reader into the context to provide a personal experience of the focal phenomenon and support for the emergent theory" (*ibid*, p. 511).

Although the discussion of visual representation of data in qualitative research is still incipient, it has a long-established tradition in natural science. As Latour (1986) noted, the historical development of scientific thought depended greatly on the use of representational tools or 'inscriptions.' Scholars

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have devoted great efforts to improve the visual representation of such inscriptions of quantitative data (Bhowmick, 2006; Card, Mackinlay, & Shneiderman, 1999; Greve, 2018; Tufte, 1990). However, even if some researchers have acknowledged the importance of visually displaying data in qualitative research (Davison, McLean, & Warren, 2012; Gioia, Corley, & Hamilton, 2013; Langley, 1999; Langley & Ravasi, 2019; Langley et al., 2013; Meyer, Höllerer, Jancsary, & Van Leeuwen, 2013; Pratt, 2009; Ravasi, 2017), and process research has been an important field for visual representation of data (Howard-Grenville, Metzger, & Meyer, 2013; Langley, 1999; Langley & Truax, 1994; Lawrence, Malhotra, & Morris, 2012; Lok & de Rond, 2013; Smith, 2002), little has been done to propose a structured approach of data visualization for process inquiries. The field still lacks "the conventions of variance studies and clearly presents researchers with challenges and trade-offs" (Langley et al., 2013, p. 8).

Thus, scholars conducting process research are confronted with some important hurdles regarding visual representation of data. The first hurdle is the absence of an ontological discussion about what visual representation of data is, how and why it should be increasingly applied, and what are the implications for organizational research. The second hurdle is the fact that little has been discussed about original and legitimized ways of visually representing qualitative, nonvisual process data as a means to make sense of the data, improve analysis, favor reflexive thinking, increase rigor, and facilitate scientific communication in process research. The last one reflects the small amount of methodological orientation offered to researchers who intend to engage in processual research.

In this article, we intend to help fill these gaps by proposing a conceptual framework of visual representations that holds as a central concept the notion of inscription, and by proposing a structured method for using visual maps as an inscription for data visualization in process studies. The concept of inscription brings to the discussion a different way of conceiving visual representation and its role in the scientific tradition of process research. This can help us move the discussion of visual representation beyond the mere advice for visual displays of qualitative data made in the past in a rather scattered and unstructured way (Langley & Truax, 1994; Meyer, 1991; Miles & Huberman, 1984a) to a more precise role in the practice of process research.

The structure of this article is as follows. First, we situate data visualization in visual methods of organizational and management research and the challenges associated with process research. Second, we propose, justify, and promote the concept of inscription as a conceptual perspective for the visualization of process data. Finally, we present the elements for developing a visual map that we illustrate through an analytical example based on the visualization of a research diary.

Data visualization in qualitative research

Over the past few decades, organizational scholars have made increased effort toward an integration of visual tools in organizational research. Bell and Davison (2013) acknowledge a visual turn in management and organization studies and claim a shift from a linguistic to a pictorial representation. Along the same line, Meyer et al. (2013, p. 489) identify an "undeniable omnipresence" of the "visual" in organizational research with the rise of a novel quality of the use of visual language.

Images and visual artifacts used to be considered only as a means of communication or 'mere transmitters of information' in organizational studies (Meyer et al., 2013). However, with the development and integration of visual methods in organizational research, the 'visual' has become a specific mode to construct and express meaning (Kress & Van Leeuwen, 1996) and also to foster reflexivity (Kunter & Bell, 2006). Ravasi (2017), for instance, claims that in qualitative organizational research we have not given due consideration to the ways in which we can enhance our visual representations of data to develop richer means of understanding our modes of inquiry. He also suggests that engaging visually with data may help researchers in the coding process and be key to the "mystery of theorizing from qualitative data" (Ravasi, 2017, p. 4). Langley and Ravasi (2019, p. 188) further advance that visual information stimulates creativity and enables the viewer to "see new relations between phenomena that are not bound by convention or preconceived notions of linear cause and effect."

In organizational research, Miles and Huberman (1994) and Meyer (1991) were among the first to propose visual representation of qualitative data. They proposed using visual representation to communicate in organizational research with greater clarity and precision. Despite the potentialities of a visual perspective on representing data, the discussions about a structured and theoretical grounded framework for visual representation and the propositions of methodological tools to represent textual data in qualitative research remain sparse and limited in scope (Langley & Ravasi, 2019; Pauwels, 2010; Ravasi, 2017).

The visual in process research

Although we agree with Langley and Ravasi (2019) that visual representation of data has the potential to bring more rigor to qualitative research in general, we propose launching a discussion about the use of visual displays in the context of qualitative process research. We present the use of visual maps as a methodological tool for process research and a means to overcoming important challenges faced by researchers conducting qualitative inquiry in this area.

In process research, researchers found themselves overwhelmed when faced with huge amounts of raw data from

rich contextual settings that need to be selected, condensed, interpreted, analyzed, and communicated. As Langley (1999, p. 691) bluntly says, "[P]rocess data are messy. Making sense of them is a constant challenge." The interpretation encompasses large periods of time and requires numerous actors. As such, process researchers must be able to see the big picture as well as sensitive details. It is up to the researcher to find rational and methodical ways to bring order to that mess so that theoretical insights can emerge, despite the fact that methods to achieve data condensation and analyze these data are rather scattered and loosely defined (Langley & Ravasi, 2019).

Process research aims at unraveling "how and why things […] change, act and evolve over time" (Langley, 2007, p. 271), which makes time an important element of analysis (Abdallah, Lusiani, & Langley, 2019; Langley, 2007; Langley et al., 2013) because one seeks to "capture and express the experience of temporality, flow, activity and emergence in concrete terms" (Langley & Tsoukas, 2017, p. 10). The longitudinal analysis typical of process research creates various challenges for researchers, such as selection of data, reconstruction of chronological logics, and bracketing data into meaningful wholes for further analysis and conceptualization. Researchers must constantly call on reflexivity and be imaginative when selecting and analyzing data to communicate their findings and show how their analysis makes theory emerge from qualitative data.

As we demonstrate later, visual representation may be an effective methodological tool to surpass those hurdles as long as one could structure the field of visual representation on a solid conceptual and methodological ground. One important and particular flaw of visual research is the fact that 'the visual lacks theory' (Maire & Liarte, 2018), which also applies to visual representation of data. Indeed, visual representation of data has no shared ontological status in qualitative research. The lack of an ontological discussion about visual representation hampers the progress of the field because there is no shared conceptual framework in which we could base the discussion and propose new theory and practice. The use of visual representation may bring important benefits to process research as well as new answers to those methodological and ontological hurdles faced by researchers. We discuss in next section the concept of inscription as a conceptual framework for visual representation of process data and then move on to the particular use of visual maps.

Visual representations as inscriptions

To communicate knowledge, researchers must decode it using signs that are understood and shared across the scientific community. The dominant sign system used in organizational research to communicate and represent knowledge has been primarily oriented toward text (Hughes, 2012; Langley & Abdallah, 2011). Gephart (2004, p. 455) acknowledges that qualitative research "relies on words and talks to create text," and Fyfe and Law (1988, p. 4) criticize social sciences as being "obstinately verbal both in its methods and its subject matter." In his study of laboratory life, Latour (1986; Latour & Woolgar, 1986) argues that the rationalization that took place during the scientific revolution was mostly based on a revolution of sight (Ivins, 1938; Ware, 2012). For Latour, reasoning through visualizing was crucial for enabling discovery and establishing the properties of natural and social phenomena. He analyzes how scientists give visibility to things that are not necessarily visible independent of their representations and affirms that "no scientific discipline exists without first inventing a visual and written language" (Latour, 1986, p. 13). Visual representation touches "the very essence of all scientific activity" (Pauwels, 2006b, p. viii) and has become an essential part of scientific discourse.

Latour (1986; Latour & Woolgar, 1986) argues that science is communicated through the use of inscriptions. He refers to inscriptions as marks, signs, illustrations, pictures, prints, or diagrams made by humans to visually represent data and phenomena. The creation of inscription is described by Chaplin (2002, p. 192) as the process through which "data are transformed into representations of data." Latour analyzes the cognitive advantages of inscriptions based on two central concepts: their *mobility* and their *immutability*: he calls them *immutable mobiles*. With pictorial representation, the represented objects become immutable and mobile; they can be transferred, translated, and analyzed from different perspectives without losing their internal properties (Quattrone, 2009). Therefore, the concept of inscription invites us to reflect on what it brings to process research, as well as why and how thinking in terms of inscription can affect the doing of process research in practice.

First, the concept of inscription brings not only a name or an ontological status to visual representation of data but also a different way of conceiving and creating visual representations of data. This is because the process of creating inscriptions according to Latour is not only a cognitive endeavor but also a social dynamic that can explain the social practices of scientific activity. Latour's research was interested in "the many ways through which inscriptions are gathered, combined, tied together and sent back" (Latour, 1987, p. 258) to understand scientific practice. Thus, by using inscription as a theoretical concept, we are leaving room for analyzing visual representations not only as a cognitive effort of the researcher to depict a scientific reality but also as the result of the relationship between people and their settings and practices (Roth & McGinn, 1998; Roth, Pozzer-Ardenghi, & Han, 2006). Inscriptions are deeply integrated with a nexus of processual activities that include observation, measurement, description, analysis, and communication (Lynch, 2006). An inscription has a process

dimension that explains that it is not just the result that counts (the data visually represented), but how it was attained and the ways in which the inscription can be employed (Pauwels, 2006b). This implies that the process of inscription should be described by the researcher to enable the readers to understand the observations, choices, interactions, descriptions, and analyses.

Second, by proposing a reflection on the visualization of process data, the concept of inscription also contributes to what Pauwels (2006b) calls 'visual scientific literacy.' Visual literacy represents the ability to make the content and form of visual representations more intersubjective by being able to describe them in a nuanced and lucid way through the combination of images and words in 'multimodal ensembles' (Trumbo, 2006). Process research in organizational and management studies lacks widely accepted/shared tools to visually represent data. Hence, many researchers are ill prepared to perform scientific visual representation of data in a meaningful and edifying way. To deal with this problem, the focus on inscriptions entails a greater attention to the establishment of shared and common practices. The acceptance of an inscription as a legitimate representation of a phenomenon depends on the degree to which the practices of data transformation into visual representation are based on legitimate and shared procedures. This is attained with a collective implication of the research community on the definition of guides or heuristics to implement visualization through the inscription process.

Finally, inscriptions are intrinsically related to reflexivity because the process of inscription involves *translation*: a process whereby a phenomenon is captured, transformed, and recreated. Translation has a geometric, semiotic, and political sense in the theory of translation (Callon, 1984). Geometrically, as in the case of data visualization, translation is the result of a mediator (in our case, a visual map) that "captures the movement of an entity in space and time through which associations and relations are established" (Nicolini, 2010, p. 3). A visual representation of data carries meaning in itself that was translated from the raw data; therefore, when it is used for scientific communication, it acts as a boundary object (Roth & McGinn, 1998; Star & Griesemer, 1989). Roth and McGinn (1998, p. 42) acknowledge that inscriptions are in their very nature boundary objects because they serve as "interfaces between multiple social worlds and facilitate the flow of resources (information, concepts, skills, materials) among multiple social actors." In the case of visual representation of data, inscriptions, as translated elements from raw data, act as boundary objects of shared meaning between the researcher and the reader. Again, conceiving visual representations as inscriptions turns the focus from representation as a mental activity to inscription as a social activity (Light & Anderson, 2009). The semiotic sense implies that the translation carries out a shift in the meaning. The visual map is not the data anymore but a visual representation of how the data were rearranged. Translation also has a political sense that can be seen in the instrumental use of the visual map as, for instance, a tool for scientific publication. This process of translation affects the way we undertake research because there are objects and phenomena in organizational research with aspects "that only become visible with special representational means" (Pauwels, 2006a, p. 2). Translation is a meaning-making process that delimits what can be inscribed and what should be highlighted or obscured.

Inscriptions and reflexivity

There have been several calls for integrating reflexivity into qualitative research (Hardy, Phillips, & Clegg, 2001; Hibbert, Sillince, Diefenbach, & Cunliffe, 2014; Lee & Cassell, 2013; Nadin & Cassell, 2006). Langley and Royer (2006, p. 86), for instance, underline the extreme importance of reflexivity for qualitative research that "tends to demand it as an element of method." Hardy et al. (2001) highlight that reflexivity aims to overcome the limitations of researchers in representing the subjects under study. Inscriptions, like words, are objects ontologically independent of the scientific reality of the phenomenon represented. The relationship between the phenomenon observed and its representation is thus a matter of reflexivity rather than a matter of correspondence (Roth & McGinn, 1998).

With these arguments we move the discussion from mere advice for portraying data on visual displays as it was proposed by Miles and Huberman (1984a) and Meyer (1991) to a process of data visualization that encompasses the different sequences of the research process. With inscriptions we position visual representation as a methodological process instead of an illustrative effort (Steyaert, Marti, & Michels, 2012). Now that we have conceptualized visual representations as inscriptions, we can propose their use in process research associated with the scientific activities of analysis and dissemination (Coopmans, Vertesi, Lynch, & Woolgar, 2014). We present next the use of visual maps as inscriptions, which enables us to develop visual literacy in process studies.

Visual mapping

Visual maps have been clearly associated with process research since Langley's (1999) seminal article. They are graphic tools with a time dimension, created to organize, manage, make sense of, analyze, and share data visually.

The time dimension of a visual map sets it apart from other types of static data visualization tools conceived to depict qualitative data. An example is the 'visual data structure' of Gioia et al. (2013), which is arguably the most influential effort to propose visual representation of inferences made from data to increase rigor in qualitative research in the

context of grounded theory. The authors present 'data structure' as a 'sensible visual aid' that provides a graphic representation of how the researcher progresses from raw data to the coding terms – a way of demonstrating rigor in qualitative research. However, 'data structures' are a "static picture of a dynamic phenomenon" (Gioia et al., 2013, p. 22), with no representation of time. Although the Gioia methodology provides a valuable means for analyzing process data, it does not incorporate temporality. As Walsh et al. (2015, p. 11) acknowledge in their critical review of grounded theory, researchers face the need for "more tools for visualizing coded data (at least some graphs) in order to spot longitudinal patterns in data on […] scale."

By representing data in a graphical and synthetic form that corresponds well to human cognition, visual maps enable viewers to overcome the linearity of written accounts and their underlying limitations in literary form. Maruyama (1986), for instance, acknowledges that human cognition synthesizes visual inputs by maintaining the spatial orientations and the interrelationships of multiple components. Easily recognizable patterns enable us to see what is meaningful, help us make sense of what we see, and compare and examine relationships (Mitchell & Rands, 2012).

As shown next, visual mapping demands reflexivity in its elaboration, which helps the researcher make sense of data (Lok & de Rond, 2013; Mainela & Puhakka, 2008) and organize data (Howard-Grenville et al., 2013; Langley & Truax, 1994; Lawrence et al., 2012). In this sense, visual maps may play an important role in the data analysis process when researchers face, as is frequently the case, an overwhelming amount of data that tend to be "complex, messy, eclectic, and with varying degrees of temporal embeddedness" (Langley & Abdallah, 2011, p. 106). Nonetheless, some scholars have used visual maps longitudinally alongside data collection (Howard-Grenville et al., 2013; Langley & Truax, 1994).

The process of visual mapping also enables the researcher to display the sequences of events, see how they are categorized, and how they evolve over time, rendering visible relationships not easily perceived in written accounts. Visual mapping provides the researcher with the opportunity to condense data by displaying "tremendous detail in a small space" (Smith, 2002, p. 385), which is, according to Miles, Huberman, and Saldana (2014), an essential part of the analysis. It is a convenient way of increasing transparency in the interpretative process. It illustrates findings and transports the reader into the 'scientific reality' the researcher created (Lynch, 2006), providing visibility to elements hidden in a literal form. It may increase rigor in process research by playing the role of an intermediate medium between raw data and theoretical conceptualization. In her analysis of strategic change, Fenton (2007) acknowledges the usefulness of visual maps 'in the development and verification of theoretical ideas', which Langley (1999) proposes as a strategy for theorizing from process data. Langley and Truax (1994, p. 625) acknowledge that visual representation using visual maps incorporates "an intermediate level of theorizing between the raw data and a more abstract and general process model." Indeed, visual mapping can be used to bridge the gap between empirical data and theory, what Klag and Langley (2013) call the ability to make 'conceptual leaps'.

According to these authors, researchers must find ways to make data speak and make conceptual sense of what was observed through the data (Gersick, 1992). They also suggest that making conceptual leaps is intrinsically based on 'seeing' and 'articulating' what the researcher can grasp from data. *Seeing* involves finding new ways of making sense of some aspects of an existing social world, and *articulating* implies the representation or visualization of this new understanding. Both *seeing* and *articulating* are improved by the analytical use of visual maps, as we will demonstrate with our example.

The process of inscription through visual mapping is not a method *per se* but rather a methodological tool that can bring important benefits to process research. Therefore, we propose visual mapping here not only as an analytical tool but also as a process of selecting, representing, and integrating raw data visually in a comprehensive and clear manner. We present next an empirical example of a research diary created in the context of a collaborative process study.

Visual mapping in practice

The example we present here is part of a process research project undertaken during the first author's PhD (Parmentier Cajaiba, 2010). The research took place at a biotechnology firm that develops biocontrol products, which are environment-friendly organic pesticides. The focus of the PhD was to contribute to a better understanding of the development of an organizational capability, and to this end Author 1 was recruited as a researcher. She also had the responsibility as a practitioner to create a new process for the company – product registration – to comply with recently modified European regulations. Product registration is a legal procedure by which pharmaceutical and pesticide companies obtain authorization to sell their products. Registration characterizes both the process and its result. In the early stages of inquiry, Author 1 decided to implement a diary in a reflexive sense, that is, as a tool to reflect on the way the research was conducted and how this process shaped the outcomes (Hardy et al., 2001; Nadin & Cassell, 2006). When the time for data analysis arrived, the creation of a visual map emerged as a possible means to make sense of the data in a reflexive perspective. The next section details the visual mapping in practice and highlights the benefits of its main features.

From data to visual mapping

As previously discussed, the process of inscription is also a social activity based on legitimized and meaningful visual representation practices. A visual map becomes a full-fledged inscription only when accepted and understood as a legitimized representation of a longitudinal process in organizational phenomena. To pursue this effort, we present an analytical example of the use a visual map in context and in coherence with the concept of inscription. As we advocate, the description of the inscription process and the underlying reflexive process is part of a method of visual representation of data through which the researcher describes her practices and choices. In our case, Author 1 started elaborating the visual map at the beginning of the data analysis stage thorough a reflexive process as described in the next section.

Reflexivity and elaboration

When Author 1 started the analysis of data, she needed to make sense of data that seemed at first messy and overwhelming in amount. In this effort, she needed to contextualize data, select and represent data relevantly, situate data in time, and relate data meaningfully. These four needs led her to adopt a reflexive glance at the data with the idea of organizing it using a visual map. The creation of the map involved her thinking about the four elements simultaneously. For the sake of clarity, we present them separately.

Contextualizing data

The first representational need was to have as much contextuality as necessary to represent relevant events. The events under scrutiny took place in different domains across the organization; these domains interacted and influenced each other throughout the process of capability elaboration. Therefore, the representation of these domains enabled a better contextualizing to relate events on the map. The basic premise of contextuality is that human actions are, by their very nature, situated in context. We cannot fully understand the former without taking into account the latter (Hammersley, 2008). By increasing contextual elements, we open the door to increasing the level of complexity that an inscription, such as a visual map, can represent. Verweij and Gerrits (2013) assert that one major response to complexity is producing rich and detailed descriptions of social life, which can be achieved by incorporating contextualization in the analysis. Nevertheless, every representation is an oversimplification of complex phenomena, which also applies to textual inscriptions, as highlighted by Abdallah et al. (2019). Hence, visual maps have as a boundary condition the fact that they cannot represent complexity in an encompassing way but rather capture more of the complexity by increasing the contextuality of the phenomenon analyzed.

In this sense, defining the domains in which events are represented enabled Author 1 to better 'see' and understand how interactions across domains contributed to the process under analysis. In this example, the organizational domains are labeled *Company Development*, *Registration, Funding*, *Top Management*,

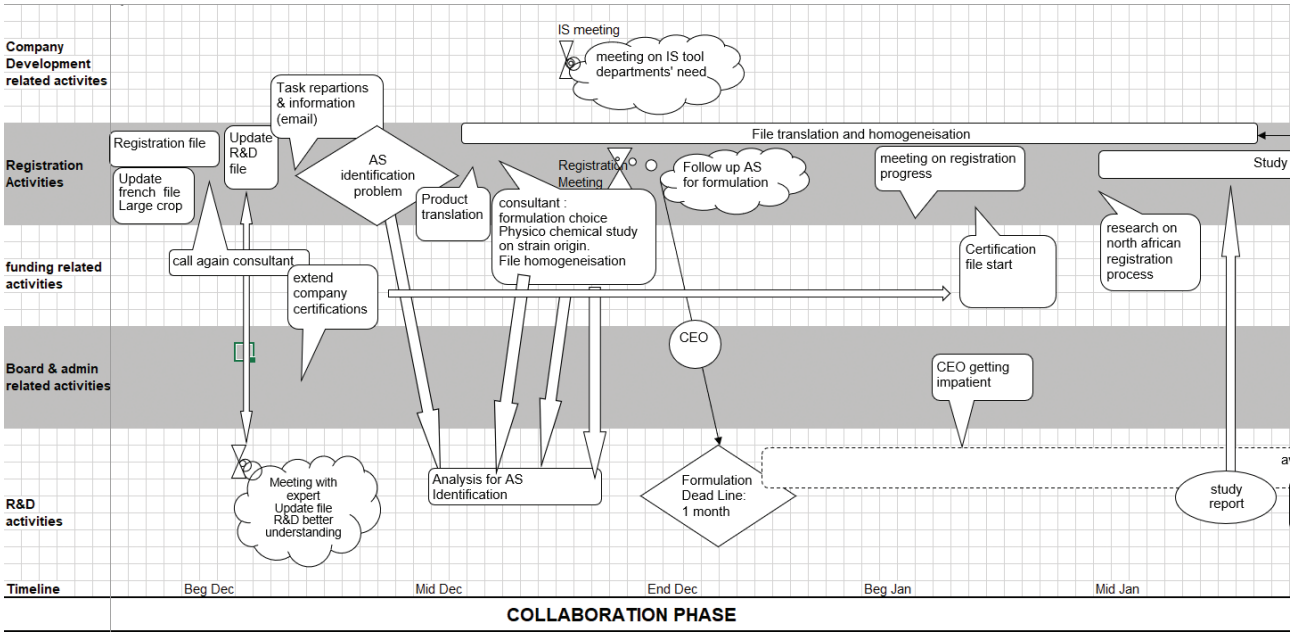


Figure 1. Excerpt of the collaboration phase

and *R&D* (Figure 1). Those labels do not represent all the organizational domains of the organization studied but a selection of the domains to which selected events are related. This selection already implies reflexivity and renouncing some of the data that are not central to the case.

Selecting and representing events

Another need comprised the identification, selection, and categorization of the types of events to include in the mapping, in other words, which event should be inscribed. The selection of events is a full-fledged reflexive phase; the researcher must select certain information at the expense of others because the creation of a map requires situating a large number of events in a limited physical space. As such, Author 1 needed to select and condense data to represent events and actions that would provide a meaningful whole. We share with Alvesson and Sköldberg (2009, p. 9) the idea of reflexivity as the "interpretation of interpretation" or "the launching of a critical self-exploration of one's interpretations of empirical material." Author 1 developed a reflexive routine to deal with the selection of events, their label, and the dynamics to be inscribed based on the following reflexive questions:

- How important is this event to the phenomenon studied?
- To what extent does this event contain relevant information to understand the phenomenon?
- How much information would I miss if this event was not inscribed on the visual map?
- Would I interpret the phenomenon differently if this event was not inscribed?
- What is the nature (internal, external, meeting, phone call, etc.) of the event and its quality (critical, important, and potentially impactful)?
- How are events related to each other?

Once the events were selected, Author 1 needed to reflect on the type of symbol or visual representation for the events to ensure what Bertin (1981, p. 5) calls "maximum visual efficacy." The challenge was to guarantee both the diversity in information despite the reduced space and the analytical organization of the events in a virtual space. This turned out to be an important step in the process, whereby the chosen events were transformed and re-created as visual elements, which brought to the fore important issues about the creation of multimodal ensembles. The basic epistemological questions about visual representation of data come from an old discussion on sociology regarding 'sociological description' or "to represent what actually happened, what was there, or some describable state of affairs" (Smith, 1979, p. 314).

The description, which has a rhetorical nature, is the analytical substance of any social analysis, but, as Weber (1949, p. 78) put it, "we are helpless in the face of the question: how is the causal explanation of an individual fact possible – since a description of even the smallest slice of reality can never be exhaustive?" Therefore, having in mind that any representation of a social reality is a simplification of this reality, Author 1 made representational choices and acknowledged the instrumental use of these representations, which is, in our case, to convince readers and to be coherent with the theoretical framework employed.

One of the main challenges of social description is to ensure what Berard (2005) calls 'disinterested description', or descriptions that are not politically or morally driven but rather driven by scholarly concerns based on principles of empiricism and logic instead of ideology. As Bezemer and Mavers (2011) suggest, and being coherent with the inscription proposition, we need to account for visual representations as transcriptions that become artifacts elaborated as a social meaning-making practice.

By looking at previous uses of visual maps (Fenton, 2007; Gehman, Trevino, & Garud, 2013; Howard-Grenville et al., 2013; Langley & Truax, 1994; Lawrence et al., 2012; Lok & de Rond, 2013; Smith, 2002), Author 1 noticed the lack of diversity in representing events that evolve on the maps; quite often events are represented by text inside circles or boxes. Author 1 did not find any guidance in the literature besides the work of designers on meaning making in visual semiotic modes (Kress & Van Leeuwen, 1996); therefore, she used forms available on traditional spreadsheet software programs combined with captions because there is no universal convention in visual representation for the symbols one should use to represent events and their interactions. Indeed, visual artifacts represent social processes that cannot be explained by reference to internal esthetic factors (Chaplin, 2002). Moreover, no object conveys content on its own; symbols must be interpreted (Card et al., 1999). This is because these representations become socially accepted as inscriptions when recognized as legitimized representations of specific phenomena (De Vaujany & Vaast, 2016).

Table 2 presents the graphical signs used to represent the events. Author 1 felt the need to represent the diversity of different events in order to pinpoint and differentiate their impacts on and influences over the structuration of the process. Author 1 created two kinds of events (Table 1): those that are punctual, meaning that they take place in a very short period of time (e.g., meeting, structuring event, decisive event, potentially important activity, and crisis), and those that occur throughout the process (e.g., background activity and intensive activity). The first type of event is either a unique event or a collection of few events that makes sense, whereas the second type of event is a condensation of micro-tasks and activities that do not make sense when considered alone but represent an important event when put together.

Table 1. Graphical signs for the representation of events

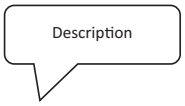
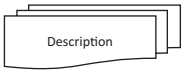
Relation to time	Events	Graphical signs
Punctual events	**Meeting** concerning the registration and organizational development of the company	
	Structuring event in the process (encounter, email, experience, etc.)	
	Decisive event occurring in the organization with an effect in the short term	
	Potentially important activity (implies a strategic choice later): occurs in the company and may have an effect in the medium term	
	Crisis: an unanticipated event having an influence on the sequence of events	
Lasting events	**Background activity**: an activity punctuated by many other tasks	
	Intensive activity: an activity punctuated by few other tasks	

Table 2. Graphical forms of the dynamics between events

Graphical sign	Type of dynamic
	Used to indicate causal relation between events.
	Used to indicate a punctual activity occurring between different dimensions. The thickness of the symbol reflects multitudes of micro-exchanges that occur.
	Used to indicate a transfer of information. The base of the arrow indicates the origin of the information. The thickness of the symbol reflects multitudes of micro-exchanges that occur.
	Used to represent phases of intensive information exchanges (e.g., meetings, exchange of emails, work files).

In Figure 1 the event 'File translation and homogenization' is represented as a lasting event. This event constitutes several micro-activities that did not made sense alone, such as 'translating from French to English', 'looking for an official registration pattern', 'adapting existing pattern', 'finding corresponding internal scientific data,' 'simplifying the claim,' and 'calling to *X* in relation to part *Y*,' which were extracted from different data sources (research diary, email database, and company documents). The visual map enabled the condensation of these data into a form of single event by categorizing data in a process of "translation of diversity into unity" (Blanchet, 2017, p. 376) or transforming heteroclite elements into coherent units. Once condensed, this event would be related to other groups of events and their mutual influence over time and across different organizational domains can then be clearly reconstructed with a visual representation.

Situating data in time

Another representational need was to set a time frame. The use of a time line involves thinking how to situate events without overloading the visual representation. Reaching this implies a serious reflexive endeavor related to the accumulation of events in time, their relative importance, and their temporal succession with regard to their relations. In line with Langley and Tsoukas (2010), the elaboration of visual maps assumes

that in longitudinal organizational research, organizations must be analyzed in a continuous process of becoming instead of as monolithic entities that change step by step. Author 1 followed Ancona, Goodman, Lawrence, and Tushman's (2001) suggestion of using visual maps to assemble activities and pinpoint the temporal location of specific phenomena – their pace, cycles, and rhythms – as they repeat over time. This enables the researcher to "draw the interactions across temporal maps and the shape of changes over time" (Ancona et al., 2001, p. 646). Indeed, the elaboration of the visual mapping pushed Author 1 to make time more explicit in the research design into what eventually "would improve the quality of empirical research in our field" (Ancona et al., 2001, p. 647).

For the chosen time frame in our example, one square represents roughly 1 day in the example shown in Figures 1 and 2. However, the choice of a temporal scale was not straightforward and demanded trial-and-error attempts when considering whether to examine days, weeks, or months, which had a direct influence on the granularity of the analysis. In our example, we portrayed time objectively, as measurable, regular, and forward moving; however, there are several ways of describing different aspects of time (Hernes, Simpson, & Söderlund, 2013; Hurmerinta, Paavilainen-Mäntymäki, & Hassett, 2016). Fenton (2007), for instance, used an irregular time frame because it was more important to visualize the arrangement and succession of events through domains than over a regular period of time, whereas Ancona, Okhuysen, and Perlow (2001) suggested the use of visual maps to map activities based on the subjective experience that individuals have with time.

Relating events meaningfully

A last representational need involved specifying the links between events. This required choosing the visual representation to best translate these links: lines, arrows, filled arrows, and so on. This task helps in surfacing the dynamics as well as the regularities identified in the phenomenon. On their road to theorizing with visual maps, Langley and Truax (1994) described an increasing effort to create codes and concepts in the form of boxes and arrows that furthered the emergence of patterns from the maps. Frequently, scholars who use visual maps limit the visual representation of dynamics to lines and arrows that indicate causal relations (Fenton, 2007; Gehman et al., 2013; Howard-Grenville et al., 2013). In order to ensure representing more variance, Author 1 created four different types of dynamics among events with specific graphical signs that encompass all relations between events retained and pictured on the map. We list in Table 2 all the graphical signs used for the construction of the mapping showing the dynamics at work.

In Figure 1 we see the importance of differentiating the links between events; for instance, the causal relationship between 'Follow up AS for formulation' and 'Formulation deadline 1' is quite different in its form from the transfer of information that arises between 'Consultant: formulation choice' and 'Analysis for AS identification.' Hence, this example shows that visual maps also offer a large opportunity to be creative in representing the different types of relations that are constitutive of the processual phenomenon at stake if one engages reflexively with the nature of the relations between selected events.

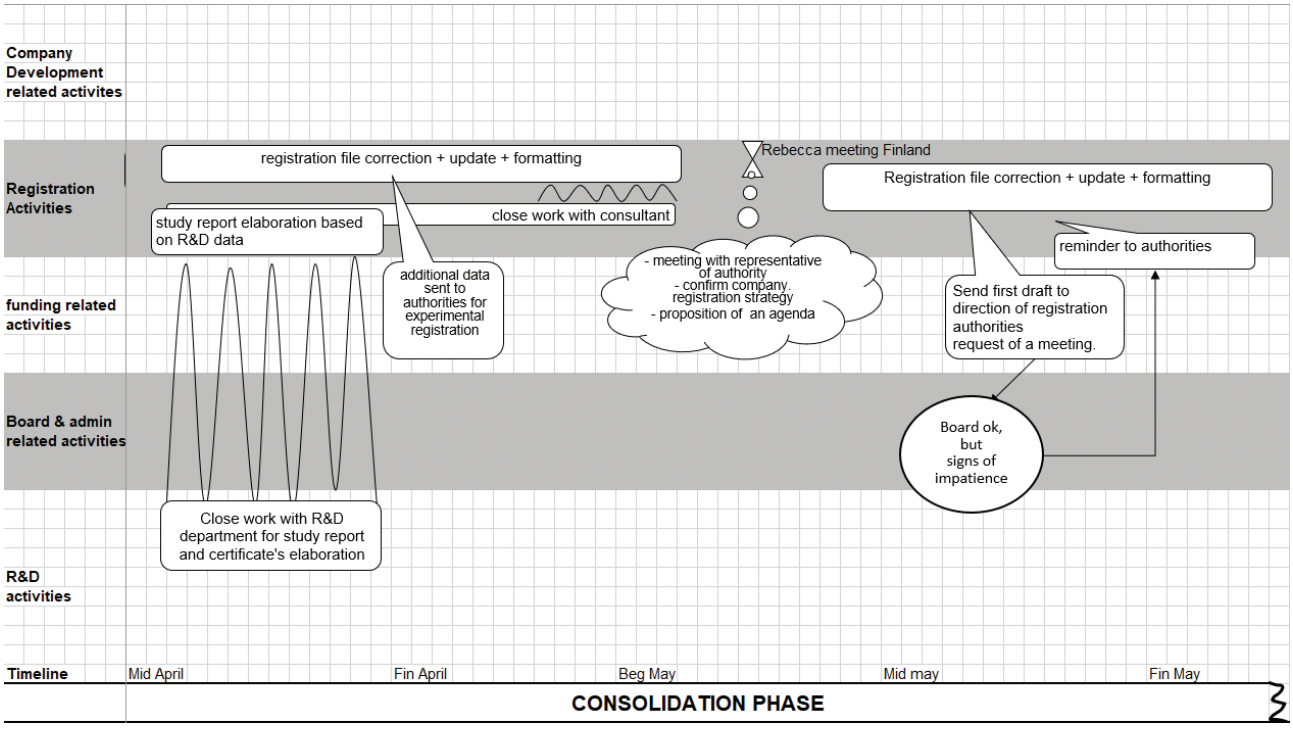


Figure 2. Excerpt of the consolidation phase

Box 1. Stages identified by using the research diary

New activity elaboration
Stage 1: November 2005–April 2006: Creating a base of knowledge with the necessary information to understand the registration process
Stage 2: May 2006–August 2006: Elaboration of a template complying with the new European regulations to guide the registration process
Stage 3: September 2006–August 2007: Elaboration of the first European registration project

Reflexivity and analysis

Visual mapping enhances data analysis in at least two complementary and mutually supporting qualitative data analysis strategies: categorizing and connecting (Maxwell & Miller, 2008). The categorizing strategy is based on the comparison and classification of data. The connecting strategy is based on the analysis of relations and connection between data and observations. Although reading written data as in a personal diary enables identifying salient facts, certain relationships within the data set do not appear in an obvious manner. Visualization enables perceiving emergent properties, categorizing events, and new ways of connecting other elements not foreseen through reading. Let us examine how Author 1 analyzed the registration activity from the research diary and after the visual representation. The following example shows how things only visible through visual representation guided the researcher toward a stronger theorization of the phenomenon.

Author 1 used the visual map in a pragmatist constructivist perspective (Avenier, 2010; Avenier & Thomas, 2015); the theorizing was abductive and dialogical (Avenier & Parmentier Cajaiba, 2012; Romme et al., 2015). First, information from the field revealed the need to elaborate the registration activity. Second, a back-and-forth movement between the field and the literature led to studying this phenomenon as the elaboration of a new organizational capability using the resource-based capability approach. The development of the registration activity took place between October 2005 and August 2007. Before deciding to use visual mapping, Author 1 broke down this period into three stages. These stages are outlined in Box 1 and were intuitively determined based on the company's activities and her experience in the organization.

The visual mapping analysis enabled a better *categorization* of the data and their temporal relation, which enabled the identification of five phases of the registration process (Box 2). These phases are a richer and more detailed account compared to the stages intuitively identified previously and presented in Box 1. Rather than providing a linear flow of activities as presented in the raw data, the visual mapping provided new perspectives for a different breakdown, which helped Author 1 'see and articulate' (Klag & Langley, 2013) different organizational patterns of the registration process. The breakdown resulting from the mapping focused on the same period from October 2005 to December 2007; however, the number of phases and their temporal bracketing differs.

Box 2. New stages elaborated by using the visual map

1. Discovery (October 2005–April 2006)
2. Strategic implementation (April–August 2006)
3. Tactic implementation (September–November 2006)
4. Collaboration (December 2006–April 2007)
5. Consolidation (May–August 2007)

The visual mapping analysis helped Author 1 break the process into phases that would not have been identifiable without the visual analysis of the inscription. From a temporal perspective, the five phases identified correspond to stages 1–3 (Box 1), implying an increase in the precision with which the process is detailed. The three-stage version of the registration activity elaboration is closer to a narrative account from the researcher's perspective. The five capability elaboration phases that emerged from the mapping analysis suggested a breakdown of the process focused on social interactions. This specific examination of the data resulted from the careful observation of the shapes that emerged in the visual mapping. The first characteristic noted was the way data were distributed by bracketing according to the activity within and between organizational domains. As shown in Box 1, the stages of the process were not labeled. With the visual mapping, the labeling of phases derived in a logical and coherent manner.

By using the two extracts of the visual map (Figures 1 and 2) we can demonstrate how the analytical process evolved and was improved by the visualization. Stage 3 was initially identified as the 'Elaboration of the first European registration project,', which was later broken down into three phases: tactical implementation (3), collaboration (4), and consolidation (5). These three phases were identified due to their dynamics on the visual map. During phase 4 (collaboration – Figure 1), events were distributed mainly between two main domains (research and development [R&D] and Registration). Events are linked by information exchange dynamics and, to a lesser extent, by causal relationships. This phase is characterized by an increased exchange of information between registration and scientific (R&D) domains. We can perceive the links of different tasks and the elaboration of specific resources, such as artifacts, embedding different types of knowledge.

By contrast, the consolidation phase (Figure 2) represents a time lapse in which lesser events appear and information exchanges are more structured, aimed at stabilizing the knowledge created in the previous phases. As we can observe in Figure 2,

events figure mainly in the registration domain, and the dynamics differ from previous phases. Events are almost exclusively tasks that evolve over longer periods. Interactions between events are not as varied as in the collaboration phase, and they are mainly associated with intensive periods of information exchange.

The collaboration and consolidation phases differ in their visual content and dynamics. The collaboration phase (Figure 1) also presents more variety and density in terms of events than the consolidation phase. This is consistent with the fact that actors in the organization experienced new practices during the collaboration phase and were trying to adapt them. On the other hand, the consolidation phase (Figure 2) is rather simple in terms of interactions. The visual map shows interactions concentrated between registration and R&D activities at the beginning of the phase, followed by a concentration of events in the registration domain. The collaboration phase aims to create a new way of working and can be compared to the creation of new routines to respond to the introduction of regulatory constraints, whereas the consolidation phase aims to refine the new practices and routines created in the collaboration phase. It is the recurrence of certain events and relationships appearing in the mapping that help label and characterize the phases.

The phasing based on the mapping helped the researcher to better theorize and not only define temporal brackets. This brings to the analysis new insights on the micro-practices carried out to elaborate knowledge and the observation of artifact construction activities related to existing resources. In this example, the mapping not only helped identify the major phases inherent in the development of the organizational capability but also enabled Author 1 to identify the specificities of each phase and how the company levels were involved. The visual map helped the researcher to better see and articulate data and thus led her to a new and coherent conceptualization of the process (conceptual leaps as suggested by Klag and Langley, 2013), later theorized as phases of a capability construction. As Latour explains, an inscription gives visibility to properties that are not necessarily visible independent of their representations. Due to the visual map, we were able to establish properties of the phenomenon that were otherwise invisible. Structuring the process in such a way enables human cognitive abilities to perceive it more clearly, facilitating the analysis, interpretation, and communication. The visual mapping also enabled the researcher to refocus on central elements in the interpretation and coding work.

Discussion

Despite the ubiquitous presence of images in everyday life, qualitative researchers have been quite reticent about the use of visual representations of nonvisual data in their research. This can be at least partly explained by the fact that organizational and management studies inherited from social science a rhetoric tradition that is predominantly text-based, which structured the field as "mostly a discipline of words" (Steyaert et al., 2012, p. 48). In parallel, a cohesive foundation is lacking as well as an agreement on how to visually represent qualitative data (Pratt, 2009; Trumbo, 2006). In this article, we propose the use of a specific visual representation tool – the visual map – in the specific research field of qualitative process research. We then propose reinforcing visual maps as a methodological tool to represent data in process research, hence inviting researchers to engage more with process research. We contribute to the visual representation of qualitative process data and, to some extent, to qualitative research in general in several ways, as detailed below.

Inscription as an ontological framework

Proposing visual maps as inscription gives us a sound theoretical framework for visual representation of qualitative data and entails changes in the way we conceive of, use, and communicate with visual representations. As inscriptions, visual maps should be understood as a visualization process that can integrate practices, measurement, description, analysis, and communication. Therefore, the process of creating an inscription is as important as the inscription itself, because it shows the researcher's choices in elaborating the visual map, bringing more transparency and showing the rigor of the interpretative process. Some scholars have used visual maps only as an analytical tool and present the whole process with a rather minimalist description, such as 'we engaged in visual mapping of the data.' Such 'descriptions' do not tell us how the visual map was conceived, across which organizational domains the events evolved, which elements were displayed, or how the elements were chosen and visually represented.

Furthermore, an inscription is legitimized when accepted as a shared practice. To date, there are no widely accepted means of creating visual maps in organizational research despite their marginal use in process studies. Visual mapping lacks the conventions and best practices of visual representation that we find, for instance, in grounded theory data sets. The heuristic that we used for the elaboration of a visual map contributes to the creation of shared and legitimate practices that can reinforce the rigor in qualitative inquiry of process research that has been sometimes associated with the lack of common methods.

Therefore, the process of creating the map leads to a reflexive effort on the weight and role of events, implying a reflection on the elements that will be selected for mapping. Such a work is generally not carried out explicitly and is a means of displaying choices transparently. Mapping has, so to speak, the role of a developer in the photographic sense. The researcher has to reflect on her own practice and understanding of the phenomenon to select events and their relations.

Data condensation

Visual mapping refines Miles and Huberman's (1984a, 1984b, 1994) and Miles et al.'s (2014) data condensation concept as a vivid and encompassing way of condensing data. Rather than condensing data through recurrent steps of coding, categorizing, and regrouping into broader concepts, it is achieved through the creation of categories of events and dynamics among them, selecting relevant events and looking for their mutual relationships, which associates both categorizing and connecting strategies (Maxwell & Miller, 2008).

Transparency

Visual mapping also brings greater transparency to the interpretive process by providing the reader with the possibility of viewing the scientific reality as perceived and understood by the researcher. It is thus a way of enabling peers to understand and reflect on the researcher's perception of the observed phenomenon and the logic underpinning the research.

Theorization

In their paper 'What theory is not', Sutton and Staw (1995) list elements of visual representation such as diagrams as 'not theory.' In responding to this paper, Weick (1995) acknowledges that such visual representations are not theory in themselves, but they should be seen as important elements on the path to developing theory. In line with Weick (1995), we extend Langley's (1999) work by showing that the elaboration of visual maps can foster conceptual leaps and, consequently, make the emergence of characteristics and phases visible in an evolving process and not only through a surface process. Visually mapping qualitative process data enables inscribing literary objects into graphical form, providing an overview of the phenomenon under analysis and a better understanding of patterns of actions. Therefore, visual mapping enables the researcher to anchor his or her results in a concrete artifact, providing a response to the question, 'what are the results of your research based on?' In this respect, visual representations may play an important role in the gray area between raw data and derived theoretical contributions. Visual maps can help theorization by enabling a better visualization and articulation of data and new ways of connecting and classifying the elements of analysis.

Representing time

Visual mapping also enables time-sensitive analysis, mapping activities chronologically, and capturing subjective perceptions of time, because the researcher can choose the conception of time he or she wants to acknowledge in the visual map. Researchers can make visual inferences about the evolution of an event over time. This is possible because in visual mapping with a temporal dimension we can visually identify recurrences, sequences, pace, rhythms, and cycles.

Reflexivity

Visual maps are not only an element of analysis (Janczak, 2006; Lok & de Rond, 2013) and visualization (Lawrence et al., 2012) but also constitute a tool for reflexivity (Spekkink, 2013). Visual maps, conceived as inscriptions, are visual representations ontologically independent of the phenomenon represented and the raw data that structure them. Their elaboration, analysis, and interpretation are thus a matter of reflexivity rather than a matter of correspondence. Each step to contextualizing data, selecting, representing, and relating events meaningfully calls for iterative cycles of reflexivity to provide a visual representation of elements that may be hidden in the literal form.

To conclude, although we acknowledge the importance of reflexivity in the elaboration of a visual map, little has been said about being reflexive during visual representations of data. Researchers may face problems when deciding what, how, and why to inscribe elements of their fieldwork. We therefore need more guidance as well as theoretical perspectives to enable reflexive thinking to occur during the process of creating inscriptions. Also, any representation of a complex system is a simplification of the system. The researcher chooses what to show (or not) depending on what he or she wants to highlight concerning a research question. The result obtained, or rather an overall objective perspective of the data, is the representation of a scientific reality that is meaningful in relation to the research question and what the researcher thinks is important to show.

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M@n@gement

UNPLUGGED – CONVERSATION

Inside Auditing and Conculting Firms: A conversation on Stenger's new book

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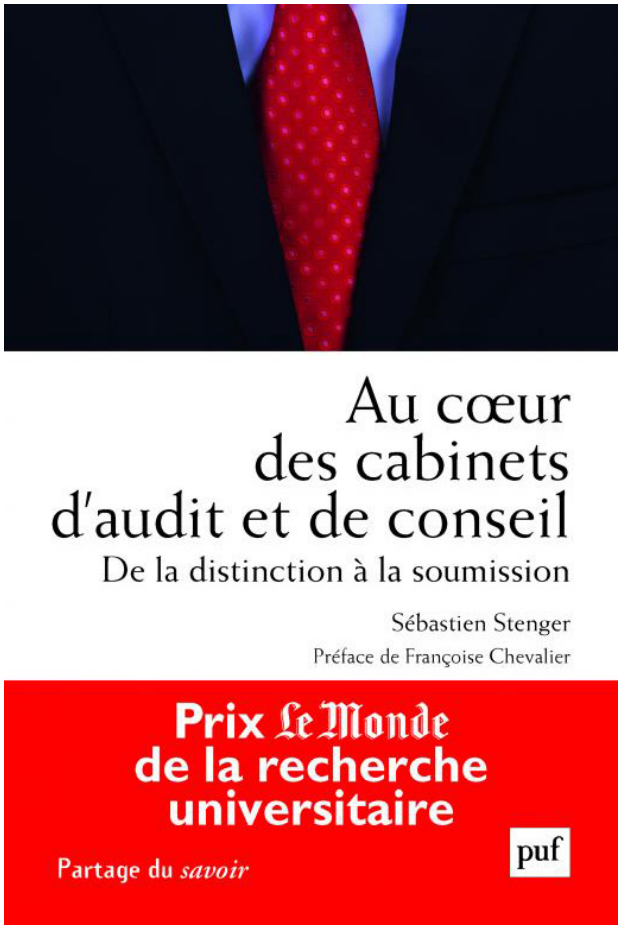
About: Stenger, S. (2017). *Au coeur des cabinets d'audit et de conseil. De la distinction à la soumission*. PUF. ISBN : 978-2-13-078887-4

With so much to like about this book, it is impossible to describe all its qualities in just a few words, which means that, unfortunately, I shall not be able to do it justice in this brief review. Sébastien Stenger's intentions in this book strike me on a personal level. As a consultant, I have experienced first-hand, sometimes brutally, the torments of the 'up or out' system. As an (auto)ethnographer who does research from a similar position, I have often found myself in an awkward situation, where I am not sure whether I need to come into closer contact with the field or instead distance myself from it – or attempt to do both at the same time. And as an ex-student, now a professor at a business school, I am, in fact, partially responsible for the production of the 'agonistic ethos,' so well described in this book.

Impeccably Bourdieusian, the observational discoveries are numerous. Sébastien Stenger deftly examines a wide range of issues: the high stakes of visibility, the sidelining of technicians at the expense of salespersons, the obtuse tenacity of work as the unique criterion of value, the adaptability of employees as a sign of their intelligence, the violence that characterizes relations with women and with those who have less symbolic capital, and the subjugation related to proactivity. Moreover, he shows that in relatively horizontal organizations, where highly qualified and very ambitious young persons' group together either spontaneously or in project mode, socio political logics of action are omnipresent – with power relationships between coalitions, bargaining over favors, efforts to court authority, etc. These logics transform auditors into meticulously proficient business promoters of themselves and their reputation. The 'up or out' system of evaluation extends the educational logic and creates anxiety-inducing distinctions that are pursued as somehow valuable in and of themselves. Fragile and ambivalent, these distinctions provide the shifting ground for the construction of the auditor's identity, a process whose mechanisms are carefully described in minute detail. Indeed, it is the authorial maturity and the rigor of the analysis that strike the reader the most in Sébastien Stenger's book. For all these reasons, I am only too happy to recommend this brilliant book both to experienced and to novice readers.



The goal of this review being to initiate debate on the book's argument, it seems to me that I have two options. The first one would be to adopt the Bourdieusian framework used by Sébastien Stenger and then, remaining inside this

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framework, to comment on nuances or discuss issues peripheral to his conclusions. The second option, the one that I prefer to explore because it seems more productive, would be to examine the relevance of the Bourdieusian model for analyzing the activity of professional service firms and for developing a sociology of work. Having made my preference clear, I should like to ask three distinct questions, all of which revolve around the same concern with *the status of the underlying critique* in the analysis of the auditing profession that is proposed in the book. I hope that I shall be forgiven for rekindling a well-known debate in French sociology (see, for example, Barthe & Lemieux, 2002).

My first question concerns the relation that authors have with their fieldwork and the degree of empathy that they have with the social actors observed in the field. Sébastien Stenger's research illustrates the power of autoethnography to take account of social phenomena. However, this proximity with the field must involve an additional effort to explain the contours of judgement or, to put it in Bourdieusian terms, the position held by the researcher in the field. There is always a form of *mise en scène* or staging that takes place in theoretical work, something that cannot be understood by readers unless they become better acquainted with the *director of the play*. In line with this perspective, Bourdieu has been criticized – in my view, quite rightly – for interpreting the hypersensitivity of the middle classes to the subtle play of social differentiation as a form of universal knowledge (Hennion, 2008). If they remain unanalyzed, is there not a risk of generalizing the personal feelings associated with the (negative) experience of a social situation? That being said, Sébastien Stenger makes a start on a salutary reflexive exercise in his introduction, discussing his academic career as an elite student in the French *grande école* system, his cautious relationship to the auditing profession, his worries as a young practitioner, his privileged position inside an auditing firm as a graduate of a top French business school, his uneasiness with 'male sociability,' etc. The reader senses his great compassion for the most vulnerable and for those disappointed by the system, and for the women who suffer from it too. But what about the men and women who make the positive, conscious, long-term choice to pursue a career in the profession? If researchers are – at least in part – 'spokespersons' for the social actors they study, then the choice they make to focus on some of these social actors rather than on others necessarily impacts their theories (Callon, 1999).

My second question concerns the issue of how the object, in this case audit work, is taken into account in the proposed analysis. Here again, Bourdieu has been criticized, this time for his inflated view of the social world, a view that he seems to impose on the objects under study at the expense of these objects themselves, which tend to disappear into the web of (economic, cultural, social, symbolic) relations brought to light all around them. In other words, whether it is a question of art, education, culture, or auditing, it seems to me that in Bourdieu, the object under study is nothing but a passive receptacle for an obsession with distinction, which may, in fact, be putting it too mildly, for Stenger (2017, p. 131) goes so far as to describe auditors as "addicted" to social recognition and status. In this way, the sociologist finds himself doing what he believes that he is describing in the behavior of the social actors: "he conjures away the object of the shared activity and puts in its place the inert symbol of a purely social collective" (Hennion, 2013, p. 8).

Double-edged – aimed both at auditing work and at auditors themselves – the author's critique occupies all the empty space created by the disappearance of the object. Thus, in Sébastien Stenger's analysis, auditing work tends to be emptied of its content (and its value). First of all, because it is only a pretext for distinction, the latter pursued as valuable in and of itself (Stenger, 2017, p. 160), even though it involves a certain degree of "futilité" and is a source of symbolic violence. In the second place, because the pretext itself is presented as something negative: the career is not very rewarding, auditors are mistaken in their belief that they belong to an elite, etc. From this point of view, it is noteworthy that there are no detailed descriptions of auditing work in the book. Instead, auditing work is described in general terms as a mechanical exercise of method or as a degrading gesture of commercialism, without any suggestion that it might bear witness to the committed involvement of auditors in their profession. These descriptions leave little room for what pragmatist sociologists would call *real work* (Bidet, 2015), a notion connected to the argument that in addition to the social phenomena of status and prestige, work incorporates an operational relation that the subject has to the world (Bidet, 2015). In and through the action of working, there emerge valorizations that are at the basis of the committed involvement of social actors (Bidet, 2015; Bourgoin, 2015; Vatin, 2009). Obviously, this is not to accuse Sébastien Stenger of not addressing an issue that he had no intention of addressing in the first place; it is simply a question of stressing the importance of work activity itself for understanding the determinants of the committed involvement of social actors in their profession.

As for the critique of auditors, it is implicit throughout much of the book, for in the last resort, what is the reader supposed to think of those who are "unconditionally subjected" (Stenger, 2017, p. 103) to the system described by Sébastien Stenger? Given that they are lulled by their illusions and trapped between their habitus (at the microlevel) and their position in the field (at the macro level), not much remains of any critical skills that they might attempt *to put into practice*. Thus, the researcher is left with the daunting task of revealing the social forces that cause these persons to act, a task that involves dressing up a sociology based on unmasking social determinations with sensationalistic observations that are likely to please journalists, but not the social actors themselves. In saying this, I am not seeking to critique the

critique; on the contrary, I am trying to support it by taking full account of the specificities of the object under study. Sébastien Stenger's close connection to the field and his interest in the critical skills of social actors *in speech* not only allow countless nuances to surface in his analysis but also suggest countless opportunities to give back to work its capacity to surprise us and to give back to workers their capacity for self-determination. This occurs, for example, when Stenger (2017, p. 97) recounts how an auditor candidly explained that he likes commercial work because in auditing "commercial" always means "techno-commercial," which is to say that the sales part of auditing work always requires detailed knowledge of the technical aspects of the profession. It also occurs when we learn that, despite the violent logics of distinction, auditors have an *esprit de corps* and enjoy rather healthy friendships with their peers (Stenger, 2017; see also Jerman & Bourgoin, 2018). Moreover, throughout this book, auditing is presented as an exercise in problem-solving, with everything that this involves – creativity, stepping back and reflecting on practices, paying attention to detail, and, of course, strength and intelligence. Most importantly, the reader is never given the impression that the social actors described – whether they be the auditors or their clients – have been duped (Bourgoin, Bencherki, & Faraj, 2020; Bourgoin & Harvey, 2018). Without sacrificing the analysis of beliefs, I think that it would also be possible to use these gems of empirical observation to take account of the commitment that auditors have to their profession.

My third question is meant to convey my openness to Sébastien Stenger's approach, for it has to do with the next stage of the research. If a rigid distinction between the market and science is not held up as a criterion for high-quality research (Clark & Fincham, 2001), if one believes instead that researchers – whether or not they adopt a critical stance – perform their research objects (Callon, 1999; Huault, Kärreman, Perret, & Spicer, 2017), then it is important to ask whether this analysis could become a lever for social transformation, one that would improve the professional lives of social actors such as auditors as well as the operations of social institutions such as audit firms. If one refuses to go this far, then the same question can be asked of researchers and professors, especially of the ones we are ourselves in our own educational work. It is in this spirit that Sébastien Stenger frequently draws attention to the similarity between educational socialization and professional experience at audit firms (see, for example, Stenger, 2017), emphasizing that his book is supposed to encourage us to make use of the scientific viewpoint on education in our efforts to understand the ethos of prestige observed at Big Four firms (Stenger, 2017). This is a fascinating issue, one that has no obvious solution, and one that I too believe we should commit ourselves to addressing collectively.

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M@n@gement

Inside Auditing and Consulting Firms – Answer to Alaric Bourgoin

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I warmly thank Alaric Bourgoin for his careful reading of my work and his personal, lively, and erudite review of this 5-year research on big consulting and audit firms. His remarks allow me to clarify some points and take into account some weaknesses for future steps.

Alaric Bourgoin's first question concerns the researcher's position in a field research based on participant observation (since the ethnographer is never an extraterrestrial (Bourdieu, 2003; Davis, 1973)) and the prominent place that I might give to the 'losers' point of view in my research. This question is important in order to avoid an 'ethnocentrism of success' (Boudon, 1973), and it invites me to clarify my relation to the field in two dimensions. The first point is my ambition, when I was facing employees' perceptions of their own experience, to never consider them as 'dominated' subjects who could have been mystified victims of managerial manipulation. Many consultants and auditors who, voluntarily or abruptly, leave these companies refuse to be reduced to 'cultural idiots' (Garfinkel, 2007): they always remind us that they are 'free' and that those who 'lose' are, in fact, not relegated to the margins of society; the idea that they could be caught in the snares of a vertical cultural domination is therefore particularly difficult to argue (Martuccelli, 2004).

So, how do I account for this 'submission,' for their ambivalent work's commitment and for this 'golden jail' that I keep on highlighting in my research? What I tried to argue, beyond a win-lose opposition, is how certain normative principles (meritocracy, competition) perceived as typical values of the upper classes and adopted by these employees can turn against them whatever their success in the firm. For instance, most auditors accept the idea of an inequitable distribution of economic profit and believe that it is necessary to rank and distinguish individuals based on the model of academic merit or sports competition (the 'winner takes all' principle). This belief in a meritocratic competition is translated into many aspects of firms' lives, such as the 'up or out' career model or the variable wages depending on diploma ('it is normal to be paid more when you come from HEC, you deserve more'),[1] and even if these principles create a violent atmosphere: I show indeed that this competition is a source of stress, anxiety, and sometimes burnout. But if these principles do not have the expected positive effects, it is not only because they would have been betrayed and perverted but also because of their own inner logic which leads to condemn the 'losers.' We thus see how individuals can produce, to a certain extent, "their own misfortune, without using the hypothesis of devious manipulation" (Dubet, Caillet, Cortéséro, Mélo, & Rault, 2006). Thus, the analysis I want to make of these firms seeks less to denounce forms of violence or top-down injustices, than to invite us to reflect more broadly on the tension at the heart of our democratic societies between equality and merit, and its potential Darwinians effects (Dubet, 2016) as well as the individualist and heroic conception of the subject which results from it.

Another effect of this 'meritocratic extremism' (Hyman, 2018) that I have observed leads me to Alaric Bourgoin's second remark: I indeed conceive work in these firms as an essential element of social status and invite to take into account representations, 'social prejudices,' and struggles of distinction carried out by these consultants who are looking for a "differentiated distribution of prestige" (Elias, 1985). This seems to me important if we consider that, in this professional field, the role of 'society' is often minimized in favor of a vision of decision centered on rational choice and individual will. But in doing so, I may have under-examined the very content of work and emphasize only the status that it confers. Though the idea that the content of activities counts less than what is conveyed through the necessary competition to succeed is especially valid in the first years of career. Indeed, young auditors' and consultants' work is neither necessarily rewarding nor intellectually gratifying (one can refer, for example, to job descriptions, where 'juniors' are often confined to fairly repetitive tasks of verification or creation of PowerPoint presentations). We should look on how work relationships are transformed into professional advancement. Alaric Bourgoin's remarks, emphasizing that there are specific effects of work 'being done' (Bidet, 2015; Bourgoin, 2015; Vatin, 2009), invite me to return to aspects that I skimmed over in my research, whether for the first grades (the issue of pragmatism to overcome huge workloads, sometimes even by 'bluffing') or for

[1] This is observed, for instance, in many women' reactions, who refuse some specific devices (home working, affirmative action policies, etc.) in the name of this exacerbated meritocracy which is, in fact, largely unfavorable to them since 15% of partners are women, whereas they represent 50% of workforce at the starting level.

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partners (the need of technical skills or customer relationships).

Finally, I believe that Alaric Bourgoin is perfectly right to point out educational issues raised by my research and I take seriously his invitation to think about the impact of school socialization on professional choices: I observed in this investigation that a certain "esprit de corps" via a "homogeneity of mental structures" (Bourdieu, 1989) defines what is superior legitimate and desirable professionally for a social group and leads to conformism. This conformism, already denounced by Bourdieu or Russel,[2] stems largely from practices of selection and internal mechanisms specific to the functioning and consecration of elites.

Contrary to what we sometimes read about the new generations (the so-called 'millennials'), which is perceived as more concerned with the meaning and impact of their work in a context of an ecological and social crisis, we actually observe a stability through time of career choices: finance and consulting are still very attractive to elite students.[3] Similar findings can be found in surveys on elite schools in other countries: Karen Ho, in her anthropology of Wall Street (2009), describes bankers as 'market fundamentalists,' subject to crazy work rhythms, eager to work with 'smart' alumnus from the best universities. Shamus Kahn, who did an ethnography of an elite school in New York State (2012), shows how work has become an obsession for the American elite, while William Deresiewicz (2015) observes that Ivy League students are looking for status and 'credentialism' and do not question their own choices.

The fact that career choices stem more from internal mechanisms specific to the functioning of elites than from external reasons (such as interest, social utility, etc.), challenges us about our role as teachers and about values conveyed in our schools.

[2] Bertrand Russell was critical with this conformism in elitist traditions: "those who from an early age have learned to fear the disapproval of their group as the worst misfortune will die on the battlefield, in a war in which they understand nothing, rather than suffer the contempt of fools. English public schools have brought this system to its perfection and have often sterilized intelligence by submitting it to the herd" (Bertrand Russell, Education and the Social Order, London, Allen and Unwin, 1932, in Bourdieu, 1989).

[3] As the responsible of the '2019 Universum ranking of companies preferred by Grandes Ecoles students' explains "Young people are betting on the short term. Their priorities are to quickly establish good references for their career, to obtain a good basic salary and to be able to take up challenges. The quest for meaning is not found in their choice of ideal company." Ethics comes second in the criteria they want their future employer to meet. We are far from the myth of "Y generation" concerned with well-being at work and the future of the planet (https://www.lemonde.fr/economie/article/2019/04/10/palmares-universum-2019-les-jeunes-privilegient-le-luxe-l-aeronautique-et-les-hauts-salaires_5448179_3234.html).

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