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Time in Organization Studies: An Overview of the Literature on the State of Theory, Research and Practice

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This review depicts the theoretical perspectives on time and their implications for organizational research. It takes the shape of a critical review of time conceptualizations across the social and behavioral sciences. To describe time as duration and to decipher the role of the past, present, and future in organizational life, one must put time as the focal point of its investigation. First we reconsolidate the most widely used conceptual perspectives of time that have been considered in organization studies. Secondly we address time in relation to the research design and approaches in organizational research. As a synthesis, this paper put forth the implications that derive for theory, research and practice. This review logically provides a summary of how time has been, and can be, considered when dealing with organizational issues. Lastly, taking the form of a discussion, we bring forth how time and temporality across organizations may be interpreted, studied and used to deepen our knowledge of organizational research topics.

Keywords: temporality, time-related research, organizational time, time

Being and time determine each other reciprocally, but in such a manner that neither can the former - Being - be addressed as something temporal nor can the latter - time - be addressed as a being – M. Heidegger

Time is now currency: it is not passed but spent – E.P. Thompson

Houses live and die: there is a time for building

And a time for living and for generation

And a time for the wind to break the loosened pane – T.S. Eliot, Poet. The Four Quartets

Any discussion of time must first indicate what kind of time is involved – E. D. Ermarth

Introduction

In our turbulent time and societies, foreseeing and forecasting outcomes and making long-term decisions seem more and more difficult; time has been a perennial subject of studies due to the plurality of upshots and the dynamics of the environment in which we are embedded.

Time always coexists “within a wider organizational and institutional setting” (Butler 1995, p. 936). Within organizations, societies and at all levels of study – Time matters. Following the quote by M. Heidegger, time may be about the

course of actions in which the passage of time shapes the very being of things. E. P. Thompson asked himself if time is rather spent, counted or passed. T. S. Eliot devoted four quartets to writing about time and referred to a time related to events. *What is time and what time is it? Is time a dimension on which the modification of a system can come to pass? Is time a measure in which events can be ordered from the past through the present into the future? Does time represent the intervals between two distinctive qualities of being?*

It is strenuous to find the boundary conditions to delimit the scope of research to perform a comprehensive review of time in organizational sciences. To limit this research to the field of organization studies, while accepting to bend the edges to bring forth some insights from different fields of studies, we focus on how time has been considered in the steps of the scientific methods, from theory to practice, to enhance and improve our managerial perceptions of time across organization.

From a managerial perspective, time has never been such a critical element of organizational sciences. Everything people do involves time: going to the workplace, meeting deadlines, reporting to managers, developing stress (Roe 2005). Temporal decisions within industries and for companies' performance were first formalized in 1926 by H. Ford when he introduced the five-day-40-hour workweek for the Ford Motor Company's factory workers. "It is high time to rid ourselves of the notion that leisure for workmen is either 'lost time' or a class privilege". H. Ford implemented F. W. Taylor's principles of scientific management, known as the first organized thoughts depicting the role of management consulting. Those principles drew on the results of his 'time studies' combined with F. B. Gilbreth's work on 'motion studies'. Time studies focused on performance through the notion of efficiency, establishing techniques for improving task allocation and standardization to optimize individual work *in time* (Taylor 1914). Time, the dynamics of time, and the temporal fit (temporality at work), are thus the essence of management.

Lewin (1943) points out that individual experiences at work are naturally temporal; therefore, we cannot dissociate the individual from the enfolding temporal environment. Organizational participants strive with competing interpretations of "what might emerge in the future, what was currently at stake, and even what had happened in the past" (Kaplan and Orlikowski 2013, p. 965).

'Achieved on time', 'by the time', 'at the same time', 'over time', 'in no time', 'at the right time', are all the sentences that guide our actions on a day-

to-day basis. Those temporal qualifiers show how time is of great significance when balancing the pros and cons of any situation incorporating Timing Issues (TI). Timing issues have emerged as a focus in organizational studies (Orlikowski and Yates 2002) and are one of the elementary aspects of firms' strategies (Das 1987). At the micro- and meso-level, timing issues within organizations may refer to, for instance, temporal conflicts between scientists and managers (Dougherty et al. 2013) or between managers and venture capitalists (Gersick 1994). For instance, the pacing style represents how individuals tend to allocate their tasks relatively to a deadline (Gevers et al. 2006).

This example reveals the significance of deepening our knowledge of time as a key component of organizations (Bleijenbergh et al. 2016). Consequently, the interest in temporal issues has rapidly increased over time within organization studies. From a macro point of view, companies in their fields face constant pressures to survive and outperform. They address market and non-market challenges such that they must manage resource scarcity and prospective opportunities. Stakeholders are pressuring for exploitation (short-term) where Top Management Teams (TMT) focus on exploration (long-term) to ensure business sustainability.

Time can be organized (Ancona and Waller 2007, Hall 1983); therefore organizations need to manage time (individual temporalities, business cycles, time-to-market, etc.) to frequently adapt to their environments and to create temporary organizing principles in and across firms (Bakker 2010). To that extent, Time Management Studies (TMS) was the first step to tackle temporal organizational issues. For instance, scheduling is a significant source of problems in teamwork (Mohammed and Alipour 2014). TMS is formalized by Shipp and Cole (2015) as follows: a set of specified tactics for goal setting (process of thinking about future ambition) to lead towards higher preconceived domination of time. TMS is also applied in work-family conflict, task performance and organizational citizenship behaviors. TMS have two basic objectives:

managing temporal issues, enhancing workplace productivity and achieving work-life balance (Claessens et al. 2007).

“There is probably no more important category for cultural analysis than the study of how time is conceived and used in a group or organization” (Schein 2010, p. 168). Many specialists have dedicated their efforts to study the role of time in organization studies or in fields related to organizational behavior topics. (Berends and Antonacopoulou 2014, Hernes et al. 2013).

Since the end of the 20th century, time as a construct has become one of the central topics of interest in the social and behavioral sciences (Adam 1994, Ancona et al. 2001, Bluedorn 2002, Blyton et al. 1989, Clark 1985, Hassard 1990, 1991, Mitchell and James 2001). Time emerges from being seen as a control variable of boundary condition (George and Jones 2000, Langley et al. 2013) to an essential dimension of organizational life that organizational researchers ought to incorporate in all the steps of the research process. This paradigm shift was possible when researchers become aware of the fact that putting the temporal aspects of organizations into focus (Biesenthal et al. 2015) was needed to better describe human behavior (George and Jones 2000) and for the enrichment of organization studies (Ancona et al. 2001, Sonnentag 2012).

Taking a bird’s eye view of recent developments in the literature, the aims of this investigation are threefold. The first objective is to interpret the discussion around time as a meta-construct. *How is time both conceived and interpreted at the theoretical level? From where and when did the mainstream conceptualizations of time and organizational temporality emerged?* The point is to approach from an ontological, epistemological and methodological viewpoint how time influences academic investigations and thus the results of those inquiries. This principle conducted the following classification approach.

The first section seeks to prove the usefulness of the conceptual distinction between time as an organizing principle (becoming in itself) and temporalities defined as the human interpretation of becoming in a cultural context (Iparraguirre 2016).

Comprehensive reviews on time in organization literature include but are not limited to: (Adam 1994, Ancona et al. 2001, Bergmann 1992, Bluedorn and Denhardt 1988, Butler 1995, Clark 1985, Fraser 1972, Hassard 1990, McGrath and Rotchford 1983, Roe 2009, Zerubavel 1982).

The second aim of this study is to establish the significance of time at the methodological level and to show the influences of time on research design and interpretation methods involving temporal features. Latest research on theory building on time includes: (Ancona and Waller 2007, Bakker et al. 2016, Grzymala-Busse 2011, Navarro et al. 2015, Peters et al. 2012, Shipp and Cole 2015, Sonnentag 2012). Recently Hernes et al. (2013) discuss better integration of time within ‘process theorizing’. This was the latest attempt at making organizational specialists more aware of time and temporality. Selective reviews taking a temporal lens in the methods literature include but are not limited to: (Arundale 1980, George and Jones 2000, Klein and Kozlowski 2000, Mitchell and James 2001, Ployhart and Vandenberg 2010, Zaheer et al. 1999).

Last, by demonstrating the implications of time-related research on the theory, research and practice (either having time as the object of study or as a simple dependent variable of the phenomenon at stake), we gradually develop the direction for future research, outlining the remaining gaps in knowledge and the future goals of studies. Finally, this review discusses the relevance of investigating time as a cross-disciplinary bridge and we give some insight into what may be an enrichment to consider time and temporality in organization studies both as an object of study and as a managerial concern.

Time Views at the Theoretical Level

Ryan et al. (2012) suggest that “time in a critical realist ontology is something to be explored and not just documented either literally or on a simple linear dimension” (p. 306). There is the plurality of thinking about time, either as a socially construct notion or as a fundamental dimension. Among those views, a broad field of studies has influenced the organizational views of time (Orlikowski and

Yates 2002) and organizational scholars have challenged a unitary time view (Reinecke and Ansari 2016). This review brings out no single theory of time (Shipp and Fried 2014). However, there are three main streams on how time has been considered in organizational research.

On the one hand, time as organizing principle (objective view that most authors refer to 'Chronos', i.e. time as a linear condition that is measurable and homogenous). The most common human time concept in organization studies is the clock-based views of time (Hall 1983). On the other hand, time as plural with multiple possibilities (subjective view or 'Kairos', i.e. a socially constructed and experienced conception of time) being mostly composed of the event-based and process-based time views (Halinen et al. 2012).

This opposition of how to perceive time in social and natural sciences has been of the greatest interest among organizational scholars (Adam 1994, Bluedorn and Denhardt 1988). Lately Orlikowski and Yates (2002) transposed the concept of structuration answering Giddens's (1984) call for better comprehension of time across social sciences: "social scientists have failed to construct their thinking around the modes in which social systems are constituted across time-space" (Giddens 1984, p. 110). Consider time as structure was also one of the focuses of Adam (1994) and Berger et al. (2002) who recognize the necessity to adopt an alternative temporal lens to study organizational phenomenon.

Time as Organizing Principle

Studying time in organization studies allow to better apprehend some of the well-known managerial and organizational activities. Industries evolve in a dynamic, path-dependent manner as a result of complex interactions (Stacey 1995). For instance, Moore (1963) addresses the importance of temporality in human life as follows: "If activities have no temporal order, they have no order at all" (p. 9). Here, time is understood as an objective phenomenon (independently of human action), a fundamental dimension, and as the ultimate independent variable – x-axis time (Halinen et al.

2012). To reword it, the objective time is absolute (Newton's conception of time), same across all situations and individuals (Shipp and Cole 2015). Time is external (exogenous), chronological, unidirectional and linear. It is an endless succession of now-points (Shalin 1986), progressive, and cumulative in its effects (Orlikowski and Yates 2002, Peters et al. 2012). Besides in this linear view, time progresses from the past to the present and to the future, events do not restate themselves (Bluedorn and Denhardt 1988). The present moment is detached from the future and the past that allows to differentiate an event from another (Halinen et al. 2012), defining a temporal order.

One of the formalization of this objective view is what is called clock time. Clock-based perspective serves as a measure of events and actions (Reinecke and Ansari 2016). This notion considers time as homogenous (each second is the same as any other second), neutral, and measurable. Annual reports, time-to-market, deadlines are the representations of this conception. According to Zerubavel (1985), time can be used as socio-temporal order, i.e., a common temporal scheme (Sorokin and Merton 1937) to regulate social life and synchronize human life. Clock time and therefore objective-base view of time is "... understood to exist independently of human actions, and is thus experienced as a powerful constraint on those actions" (Orlikowski and Yates 2002, p. 688). Therefore, organizational life used this conception of time as a rationalization process to make sense of time and formalize goal prioritization, resource allocation, and see time as a resource that "is not passed but spent".

Time as unique and embedded is the standardization of common frameworks for predictive models and work discipline commodification. Scheduling and deadlines define the temporal footprint of work (Roe et al. 2014) indicating the beginning and end of the activities. In this view, the notion of timing, delay, time lags take all their meanings (Guenter et al. 2014). We commonly asked why there is a time value to money; here, we may more likely to ask why there is a money value to time. Time has no qualitative

dichotomization. Bluedorn (2002) call it, fungible time referring to a clock-based view of time. Time becomes a resource taken for granted (Adam 2006); a management tool for industrialization of work-related activities (Bakken et al. 2013) and for the control of organizational life (Bluedorn and Waller 2006, Reinecke and Ansari 2015, Thompson 1967, Zerubavel 1985).

Other conceptualizations refer to these organizing properties of time and adopt a linear view to describe specific managerial situations conceptualized through time-related constructs: railway time (Zerubavel 1982, 1985) for time standardization; peach time, coke time and banana time (Roy 1959) for monotonous work situations and interaction time (Perlow 1999). Then, clock-time orientation is meant to measure efficiency, control, productivity and to monitor career development, and work-life balance. It may therefore be unsuitable for managing complex, emergent and indeterminate processes (Reinecke and Ansari 2015) revealing the need for another conception of time.

Time a Plural with Multiples Possibilities

The opposite concept rely on a constructivist point of view (Halinen et al. 2012) that unveils the inconsistency of the objective way of understanding organizational time. The most comprehensive conceptualization of subjective time is provided by sociologists, mapping the spatiality, materiality and contextualization of time (Brown 2005, Hedaa and Tornroos 2008), and analyzing different elements such as time frames, temporality, timing, tempo, duration, sequence and temporal modalities (Adam 2008).

“It is almost as if the precision with which we can measure time is an indicator of our existential lostness” (Bakken et al. 2013, p. 19). The most critical scholars affirmed that time is in itself a social construction (a human concept) and that there is as a result no objective view of time (Adam 1994, Bluedorn 2002).

Adam (1994, 2006, 2008) formalize the ‘timescape’ to express that multiple dimensions of time may concurrently coexist. She identified three

dimensions: timing, duration (length of a time frame) and the temporal modalities of past, present and future. In this view, time and timing are not absolute. This subjective time view allows multiple perspectives of time, one for each human way of apprehending the environment (Halinen and Törnroos 1995). From a sociologist point of view Malinowski (1990) envisions this subjective view as follows: “Every group of humans share the need of ... fixing dates for the future, of placing reminiscences in the past, ... and estimate the length of time”.

Time from a human perspective is heterogenous, and is subject to interpretations. “Explanations of this experience of time in the present derive from the organizational and institutional context” (Butler 1995, p. 925). Therefore, time as experienced can only be understood in context (Shipp and Cole 2015) and is indissociably from social structure (Emirbayer and Mische 1998, Hassard 1990, Shalin 1986). Actors can, through their temporal experiences, interpret and reinterpret past and future contingently. The past, present and future are interwoven in a way that the vision of the future may shape the significance of the past, and the past can influence our prospective actions. “The past ... is ... a constantly shifting sea of meaning that gets reconfigured every time we invoke it” (Bakken et al. 2013, p. 16). This around-the-clock reconstruction of past and future (Hernes et al. 2013) allows the production of plausible connections among these perceptions that are required for actions (Emirbayer and Mische 1998), since our actions are influenced by time pressure, strain, demands, temporal urgency, and temporal orientation that are the formalization of our temporal interpretations.

This intertwining notion emerged from the American Pragmatism tradition declaring that our course of actions relies on the recombination of experience and the anticipations of the future.

Similarly, time from a human perspective is cognitively cyclical, suggested to endless reconstruction (Simpson 2009). Time is relative (particular) and endogenous. These alternative

temporalities reject the time as organizing principle. Events may not be ordered by an external entity because time is subjective and internal (Plakoyiannaki and Saren 2006). Halinen et al. (2012) state that this human conception of time may be described per five properties: “before time”, “time flow”, “time periods”, “the connected nature of time flows and periods”, and “different with these considerations”. Time becomes a feature of organization life, experienced by organizational participants (Hernes et al. 2013).

Broadly, time is qualitative and compared to a social construct, contextual and associated with collective phenomena (Hassard 1991, Lauer 1981). It is the human time of intentions and goals, depicting the lens of the organizational participant. The objective view becomes pointless because complex processes seem to be too elaborate to be comprehended through a standardized conception time. Therefore, two main conceptualizations appear in the literature.

First, event time which refers to a certain extent to time as the product of norms, beliefs, customs of individuals and groups. An event is an interval during which there is something unique that arises. Time comes from the events that are correlated to each other (Bergmann 1992, Sorokin and Merton 1937). Events may define time itself such as lunchtime, bedtime, banana time (Roy 1959) that describe specific activities. But there is still a respect for the present, past and future that sets the tempo for events. “Events shaped by humans and enacted through social construction together form the event-time” (Halinen et al. 2012, p. 216).

“Time is about becoming, not persisting. In our approach, we are attempting to find time in nature so that it emerges from process” (Atmanspacher and Ruhnau 1997, p. 375). This alternative perspective of subjective time is called process time. It relies on the definition of the process has a “changing state of the subject of study defined with reference to a certain time interval” (Roe et al. 2012, p. 631). The stream of process theorizing rose with (Mohr 1982) in organizational behavior. Relating to these fundamental properties, process-based view of time focuses on investigating how

change, order, and crisis takes place with a temporal lens. Organization is represented as an endless undertaking in a permanent state of coming to be something else (Hernes et al. 2013, Langley, and Tsoukas 2016). Process-time allows the plurality of time discussed above (Ancona et al. 2001). As a subjective-based time view, it is subject to the diverse interpretations and explicit modifications of organization’s participants (Reinecke and Ansari 2015).

The focal points of study are the notions of emergence and evolution of organizational states, such as temporal evolution of events, temporary organization (Bakker et al. 2016). Where scholars taking an event-time lens take snapshot of events to differentiate each state from each other; per Reinecke and Ansari (2016), process time challenges us to see temporality as “an intrinsic part of the very processes being studied” (p. 5).

Therefore, process time is endogenous to events, experiences and processes (Chia 2002). Process-based view of time studies how the succession of day-to-day activities and experiences come to pass. Here time is not a dimension of events or defined by events themselves but a plurality of temporalities interwoven in processes. It refers to the flow of time that naturally ordered and processed information within individual’s consciousness (Schutz 1972). According to Hernes et al. (2013), the process-based view of time is about being in time as we stand in the flow of time. It is therefore an experience of being (Heidegger’s perspective). Like, process theorizing comes to recognize organizations as a day-and-night process of coming to be something, process time focuses on particularity, complexity, contingency. The focus is on the course of actions that lead to a change of state and neither on the upshot of the event nor the event itself (Langley and Tsoukas 2010).

“The river is not an object, but an ever-changing flow; the sun is not a thing but a flaming fire” (Rescher 1996, p. 10). Process thinkers such as Whitehead, Mead, and Ricoeur worked towards a continuous relation between past, present and future that mutually co-exist and interact with each other (Hernes et al. 2013). It confirms the circular

or cyclical perception of time, as recurring pattern unfolding over time.

Biesenthal et al. (2015) reaffirm that experience of time is both based on past experiences and projected futures. Adopting a processual lens of time (process temporality) is therefore akin to explore the flow, fluidity, emergence and temporal ordering of activities in organizations (Langley et al. 2013, Tsoukas and Chia 2002); and to study the contextual and processual character of changes.

Temporal Structuring

Time in organization studies has been perceived as either a homogenous or a social construct capable of being merely embodied. Time either as Chronos (describing time in a chronological sense) or Kairos (subjective experiences of living within time) can never be embodied in its character as time except by organizing a habit. Peters et al. (2012) resume that “time can hence be a multi-faceted phenomenon, in which both socially constructed subjectivist perspectives and objectivist views of time as a neutral medium have a place” (p. 731). In this optic, studying time in organization studies calls for another time view to bridge the gap between the objectivity and subjectivity perceptions of time. To a certain extent, temporal structuring as a way of understanding and studying time (Orlikowski and Yates 2002).

This alternative conception draws from the social theory of structuration of Giddens (1984) in such way that structuration theory has addressed both theoretical and methodological aspect of time (Hedaa and Tornroos 2008, Peters et al. 2012). The structuration theory argues that social systems are the results of practices and social interactions; it treats with the emergence and evolution of structures, the adjustment and continuation of processes (Giddens 1984, Parker 2000, Peters et al. 2012). In the same manner Halinen (1998) perceives time both as physical and social construct. Before conceptualization the notion of temporal structuring, Orlikowski et al. (1999) found their concept in Weick's (1979) works on ‘enactment’ and Sahay's (1997) interpretations of this construct. This view of social life allows us to

construe time as “both constituted by and constituting social practices”. The fundamental perspective behind this view is that “people enact a multiplicity and plurality of temporal structures, not all of which can be characterized in terms of the clock or deadlines” (Orlikowski and Yates 2002, p. 698). Thus, a phenomenon may shift from being one-time even to being recognized as part of an ongoing cycle. Time may be a social construction as a result of human actions and interaction. Thereby, temporal structuring regards the different conceptions of time as an interrelated duality.

Berger et al. (2002) also mention that time is constructed between organizational participants as they interact within social structures. (Adam 1994) broaches the interconnection of time and the difficulties to discriminate an objective view from the subjective-based view of time: “we are not dealing with clear-cut divisions and isolatable principles that exist parallel to each other, but with aspects that interpenetrate and implicate each other” (p. 67). Following this idea of an interlaced connection between clock- and event-time Slawinski and Bansal (2015) resume that the temporal frictions between these two opposing views are the causes of many intertemporal tensions (Bluedorn and Denhardt 1988, George and Jones 2000), such as the pressures of deadlines (Perlow et al. 2002), the tradeoff between efficiency and flexibility (Thompson 1967) or the contradictions in decision between short-term and long-term (i.e., the ambidexterity paradox (O'Reilly and Tushman 2013), navigating between exploration and exploitation).

Temporal structure can be understood as “the medium and the outcome of people's recurrent practices” (Orlikowski and Yates 2002, p. 685). In this alternative view, actors, in their daily works, produce and reproduce a variety of temporal structures which in turn may shape the temporal rhythm and form of the organizational participants' ongoing practices. Temporal structures attune how time is brought into play in organizations and, at the same time, temporal structures may be re-enacted in organizational practices. “Organizations use timelines and performance indicators as tools to

produce and reproduce temporal structures that format their management models and render organizational activities” (Reinecke and Ansari 2015, p. 639).

This practice-based view of time enables a view where time is at the same time subjective (‘shaped in action’ or emerge from) and objective (‘shaping that action’ or are embedded). By building in the midst, temporal structuring deciphers the way in which people’s actions are shaped by structural conditions outside their immediate control (Orlikowski and Yates 2002).

Combining both the objectivist and subjectivist view is critical to grasp how temporality can be both produced but also reproduced. As of today, what we may broadly call ‘Time-As-Practice’ is the most state-of-the-art view of time. It goes beyond the disparate former perspectives, and aim to change how practitioners perceive organizational phenomena. This conception of time is deployed to catch the co-construction of time within organization (Berger et al. 2002) and to get to the bottom of time dimensions that are involved in organization practices (Orlikowski and Yates 2002).

As a consolidation of thoughts Hernes et al. (2013), with his modern processual lens, suggested from Heidegger’s (1962) arguments on time that organizational temporalities and time may be seen as “integral to the experience of being human, as it is threaded through the practices that shape, and are shaped by our day-to-day actions” as organization “historize from their historicity” (p. 3).

To accept that individual experience of time is legitimate in both objective and subjective ways (Ancona et al. 2001) is to admit that the temporal dimensions across organizations are the result of institutionalized norms and that organizational actors’ role can reproduce or reintegrate these institutionalized norms (Fleischer 2013).

Lately Kaplan and Orlikowski (2013) have improved the temporal structuring concepts to specify that it is not only about structuring but also about the plurality of interpretations – what they call: ‘temporal embeddedness of agency’.

Broadly saying, the practice-based perspective of time perceives time as constituted by human actions through temporal structures that are shaped and being shaped (Orlikowski and Yates 2002) by organizational actor’s practices. Finally, this conception display how it is important to build bridges between the opposing views of time, in a way that it may allow us to see the interplay of time conceptions and the way in which they are mutually constituted in everyday life.

Time at the Methodological Level

Research on time has responded to several complaints about the lack of attention to temporal issues in management literature. For instance, organizational scholars have shown the unconventional scarcity of temporality as more than a functional variable in organization theory (Johansen 2015, Kaplan and Orlikowski 2013, Langley et al. 2013) because most remained reluctant to embrace a temporal lens.

Peters et al. (2012) affirm that the “conceptualizations of time have methodological implications” (p. 731) in a way that the point of view and moment of observation (the conceptual choice and period of study) from which researchers and practitioners view time across organizations may affect what they see (Orlikowski and Yates 2002). In other words, the epistemological time dimension is a meta-construct that defines how the investigation will take place and impact the conception of the object of our study and the outcome of our inquiry. Therefore, organizational problems are determined by the temporal lens organizational scholars adopt, “the lens of the researcher” (Reinecke and Ansari 2016). Hence, indirectly, time influences our interpretations of phenomena (Zaheer et al. 1999).

Research Design

As stated by Roe (2009), organizational scholars often think about theoretical conceptions of time in a rather implicit way; whereas time is a notion that is most invaluable yet often interpreted as a boundary condition (George and Jones 2000, Klein and Kozlowski 2000). Thereby, there is a need for

more integrative, cross-level research in organization studies (Anderson 1999, Rousseau and House 1994).

To move beyond the constraints of micro and macro variables, we need to study the process by which organization contexts are constructed by interactions and social dynamics (Rousseau and House 1994). Time as an essential component of the structuration of the organizational contexts of action may therefore play a significant role in deciphering social interactions. For instance, without knowledge of causality between events observed or experienced, out of order measurements in terms of timescale, timing and frequency may guide to inaccurate reasoning (Gielnik et al. 2014).

Temporal dimensions of research is crucial for making more constructive assessments regarding theoretical effects (Mitchell and James 2001), and to develop more correct empirical results (Gielnik et al. 2014). Yet often research determine the recording interval and the period of observation (Zaheer et al. 1999) by practical considerations (Ployhart and Vandenberg 2010) because scholars do not have a fine approximation of the causal parameters (Gielnik et al. 2014, Mitchell and James 2001).

Navarro et al. (2015) infer that time is plural and must not be a movement parameter but a modality to measure internal change. In this optic, time has been studied as a knowledge generation variable, a strategic factor in change and transformation, or even in relation to knowledge work (Asimakou 2015); but there is still room for improvements for the conditions of time as a research design tool. This explains, to a certain extent, the call from Halinen and Törnroos (2005) for better-knowledgeable theoretical and methodological tools to analysis time in researching industrial networks (Halinen et al. 2012).

The consideration of time in research design is twofold. The first level is the 'elapsed time' (the amount of time passed between the start and the end of an event, i.e. the duration of this event). Here time is seen as 'before-after experimental design' (Navarro et al. 2015). Secondly, time can be purely

an independent or dependent variable. Time can help to describe a phenomenon that is to be explained, or adduced as contributions of the explanations of that phenomenon. "The analytical status of time as an independent variable and a dependent variable is not confined to either of the two notions" (Butler 1995, 926). For instance (Nadkarni et al. (2016) summarize, from previous studies on economic short-termism and temporal myopia, that time horizons (or temporal distance at which a person considers when making a decision) have an impact on strategic choices. However Souder and Bromiley (2012) describe the redefinition of time horizons based on the agenda of decision makers.

As far as longitudinal research design is concerned Halinen and Törnroos (1995, 2005) suggest three forms of longitudinal research (historical, follow-up and future studies) each taking a different ontological view of time. Selecting between one of them is to be able to examine unlike organizational properties and to constraints the means to domain-specific inferences. Therefore, using an appropriate longitudinal lens for research is essential (Shipp and Cole 2015). As an illustration, Frese et al. (1996) combine a representative longitudinal study with a cross-sectional study to analyze a broader historical context in order not to be limited by selecting one specific methods and research design that would have restrained the scope of potential findings.

Another major time-related issue in organizational research is the research sustainability. *How long can hypothesized reasoning remain consistent and meaningful?* We must look at time as a "boundary condition of theory" (Sonnentag 2012, p. 363); and as George and Jones (2000) noticed, it is not in all respects applied.

Temporal factors in organization research should be considered as validity limitations for the inquiries originated (Whetten 1989) and also as a "moderator of the phenomenon" (Klein and Kozlowski 2000, p. 14). For instance, the positive correlation between organizational performance

and above-average financial result may decrease over time. So that even time-related concepts may evolve over time.

Klein and Kozlowski (2000) devote one of their principles of multilevel organizational theory building to the “when” of research. This principle verbalizes that “the temporal scope, as well as the point in the life cycle of a social entity, affects the apparent origin and direction of many phenomena in such a way that they may appear variously top-down, bottom-up, or both. Theory must explicitly specify its temporal reference points” (p. 14). Temporal settings are more than where the study takes place; it is a historical place in time that helps build the organizational context and understand the movement of downward or upward changes in linkages. Time is viewed, therefore, as a contextual variable that act as “a surrogate for the environmental stimuli” (Johns 2001, 2006).

(Klein and Kozlowski's (2000) recommendations about time also incorporate the two remaining notions as follows: give close attention to timescale that characterize the size of the temporal intervals define to test a hypothesis about a phenomenon (Zaheer et al. 1999) to capture both manifestations that can emerge either over a short period of time or a longer one. Temporal concept may appear altered depending on “how narrow of a timescale a researcher uses for conceptualization measurement and analysis” (Shipp and Cole 2015, p. 239). Events have a time span, actions have a time frame, it is logical to think that using different timescales of investigation may be crucial for the detection of the temporal dynamism of social life.

The last recommendation is to pay attention to entrainment that is the process by which activity cycles of one system synchronize to those of another more dominant system (Ancona and Chong 1999, Ancona and Waller 2007, Bluedorn 2002, Nadkarni et al. 2016), acting as time giver. The entrainment theory study how temporal change (adjustment of the pace of activity to match with that of another) of the internal activities adapt to the temporal features of the external environments. It provides meaningful insights of “how the external

temporal system influences team processes and how these processes may, in turn, be linked to larger temporal patterns in the organization and external environment” (Ancona and Chong 1999, p. 3). This last concept shows that processes, events, phenomena can be tightly coupled and Klein and Kozlowski (2000) insist that theory aiming to study these phenomena have to use befitting time cycles.

The former section of this review showed that time may be seen from multiple perspectives; this part has focused on depicting that it may also be viewed from multiple-level of analysis to better understand the web of causation in organizational life. The literature above demonstrated that temporal issues may occur at different places in space and time across an organization, internally and externally.

Despite the perennial call to bring to the light the temporal dimensions of research design (Bakker et al. 2016), organizational scholars have taken a little care to how approach and apprehend time by determining research design often by convenience rather than theory and therefore to the analysis of time-involved phenomena.

Methods & Analysis

We have seen that ontological and epistemological temporal considerations affect both the lens of the researcher and the conduct of organizational research. Nonetheless the different methodologies to perform satisfactory research integrating temporal features are not well defined whereas it is crucial to develop both theory and empirical studies that is constructive in helping researchers to collect data at opportune times (Gielnik et al. 2014). Most of the research reviewed so far does not specifically treat the subject of gathering and advising methodological approaches to use or how to put time as a guiding concept for methodological approaches. To a certain extent, this result in a natural call for suitable methodologies and recommendations to carry time-related research. “What needs to be appreciated from the very start is that taking time seriously is not like a cooking recipe” (Adam 2008).

On that account this part enumerates field-specific approaches that have been used to carry out research incorporating temporal dimensions.

The body of work done by Hernes et al. (2013), for the third special issue focusing on the processual nature of managing and organizing in time, speaks clearly that time served to draw different inferences from data through alternative lenses and advocate the use of qualitative approaches. For instance, Hernes et al. (2013) suggest that participant observation combined with a longitudinal approach is suitable to capture changes. Strictly speaking we have to look for what may occur and not what happens to the managed object over time (Hernes et al. 2013).

Kaplan and Orlikowski (2013) use a sensemaking³ approach (interpretive links in time) to look into the past to find the rationality of organizational participants and to show that future visions may cause reconstruction of history (Weick 1995). This study aimed to adopt an interpretative approach to apprehend the way in which actors construct a strategic account that enabled concrete strategic choice and action.

Schriber and Gutek (1987) detail the time dimensions of organizational culture and measure those temporal dimensions through a questionnaire designed to highlight the temporal culture of work. Hecht and Allen (2005) develop in their article a 'polynomial regression techniques' to analysis the correlation between polychronicity² preferences and job-related outcomes. Gioia et al. (2002), Suddaby et al. (2010) put forth in their separate studies that an interpretive view of time is well suited to better investigate organizational strategy making issues.

In the case of studying organizational learning temporalities, Berends and Antonacopoulou (2014) advocate 'in-depth qualitative' studies to interpret the processes through which the passage of time and time taken for learning affect organizational learning. They recommend 'mixed method' studies for better field-specific concepts, knowing that perspectives of time as duration may happen at multi-level in organizations.

We have seen that time as duration has called for an interpretative approach. Fleischer (2013) suggest that in the case of time as a resource, it seems preferable to use more comparative empirical research to investigate the development of time during crisis periods.

Navarro et al. (2015) resume the different recommendations for the W&O Psychology field of research on how better incorporate the notion of time and temporality as an enhancement of actual studies. They suggest three different theoretical moves: (1) a process ontology to study changes highlighting the temporal connections among events (Van de Ven and Poole 2005); (2) a radical temporalist referring to the investigation of phenomena to identify temporal features of change; (3) considering different patterns of change, e.i., non-ergodicity, non-linearity and endogenous.

Finally, to find purpose-built methodologies to apprehend time in organizational research, one should refer to the plurality of handbook on research methods dealing with timing issues. But a review on the way to better appreciate the value of time in organizational research remains unpublished.

Are time-related investigations different from any other constructs observed or domain-specific inquiries? Should either a positivist or interpretative approach may suit as it should do for more common topics of interest? Does the data-gathering process and methods (retrospective interviews, ethnography, computation modeling, multilevel study...) are of sufficient meanings to produce relevant results? If we had to suggest a meta-theoretical framework for an empirical investigation of time in organizational science, first we may advise to distinguish between direct and indirect investigation of time in organization studies. Secondly, we should discriminate these two parts between quantitative (data analytic) and qualitative methods (interpretive).

Implications for Theory, Research and Practice

"Time is as fundamental a topic as any that exists in human affairs" (Bluedorn and Denhardt 1988, p. 316) and the conceptions of time are decisive to

determine the way we decode organizational phenomena (Reinecke and Ansari 2016). In this optic, time gives an opportunity to improve research in multiple ways in which time may be incorporated in theory-building (where and when concepts and hypotheses are applicable), because theory cannot be comprehensively examining without stipulating the timing of effects (Zaheer et al. 1999). “How long does it take a variable X to affect Y?” ... and for Y to become observable? (Mitchell and James 2001, Sonnentag 2012, p. 363).

Constructs may benefit from temporal dimensions by including temporal features in organization studies (Navarro et al. 2015). Grzymala-Busse (2011) underline how central the time dimension is in some temporality issues, e.g., tempo, speed, or entrainment concept. This is also confirmed by (Raab and Goodyear 1984, p. 263) that state than “when we ... start to ask why the behaviors in question came into existence, changed, or remained stable, we approach meaningful theory-building”. (Ployhart and Vandenberg 2010) also accentuate the methodological advantages of time in empirical studies.

Navarro et al. (2015) contends that any theory in the field of W&O Psychology must contain four essential elements: (1) clearly define the constructs, (2) why and how they are related, (3) specify the scope of applications, and (4) the boundary conditions of these constructs (where, when and for how long).

Time plays a significative role to fulfill these requirements. Nonetheless the integration of time dimensions may be difficult to realize given that it implies to renew the ontological and epistemological commitments of research (Reinecke and Ansari 2016). For instance, Navarro et al. (2015) suggest to emphasize the human dynamics of organizational phenomena as a renewed calls for inquiry into time.

A perfect example, of this paradigm shift, is Kaplan and Orlikowski's (2013) research; they contend that daily organizational participants' activities must become the object of study to put temporal work as a central practice of strategy

making. With this assumption, they completed research on strategic sensemaking (Balogun and Johnson 2004) and better apprehended technical changes that occur within organizations (Kaplan and Orlikowski 2013).

Sonnentag (2012) recognizes the value of delving to the temporal dimensions of research. She points out several studies (see for example, Ancona et al. 2001, van Knippenberg and Schippers 2007, Soda et al. 2004) that incorporate temporal contexts and should benefit from the integration of temporal features in their theory to add significative value to the hypothesized propositions and observations. Temporal context is present in far more broader topics such as economics, or individuals at work (Shipp and Cole 2015). Lately Gielnik et al. (2014) incorporated a factor time to study temporal dynamics in entrepreneurship and demonstrated how this initiative has brought meaning insight to their research.

Shipp and Cole (2015) suggest to investigate change with-in individual through cross-level research and with a temporal lens. As per their opinion, it will enable to identify future research avenues that would likely contribute the literature, one of these openings could be to examine “individuals' attitudes, intentions, and behaviors within objective and subjective time” or “human recollect the past, forecast the future, and can experience the passage of time differently” (p. 254).

Similarly, Orlikowski and Yates (2002) stress the implications of temporal structuring for organizational research. Their ontological view of time build a bridge between the universal (global, standardized, acontextual) and the local (situated, context-specific) views of time. The notion of temporal structures also creates linkages between the perennial opposing views of linear (monochronic), flexible (polychronic), cyclical (production) time, natural time (ecological) and social time. Reinecke and Ansari (2015) identify three competing temporal structures : (1) snapshot versus moving picture : instant stable entity versus movement unfolding over time, (2) temporal symmetry v. asymmetry: synchronizing activity

versus temporal complementarity among temporal asymmetries, (3) long-term versus short-term temporal depth (Langley, and Tsoukas 2016). They conclude that organizations face with different temporal structures at different levels. As a result of this study, the term of temporal reflexivity was introduced to explain the awareness of “the human potential for reinforcing and altering temporal structures” (Orlikowski and Yates 2002, p. 698) through their everyday practices.

The entrainment theory mentioned in (Klein and Kozlowski's (2000) research has been used in teamwork analysis to get to the bottom of the time-dependency of workflow and the interdependence with the environmental context. This demonstrates the value of using time-related concept as an enhancement tool to deepen the knowledge of the temporal features across organization processes.

On the one hand, research on time use is based on an objective approach of time such as McGrath and Tschann's (2004) book on work-life balance. On the other hand Pinae Cunha (2004) uses an even-time-based management to demonstrate that planned change may be induced by ‘temporal shifts’. On the same perspective, time might be particularly relevant in fields requiring an explicit temporal perspective.

A direct contribution of time to entrepreneurship literature was Tumasjan et al. (2013) who worked on the concept of temporal distance in entrepreneurship highlighting the inconsistencies in previous research on entrepreneurial opportunities and the evaluation and exploitation processes.

In the field of competitive advantage, the first step in assessing performance as an essential source of competitive advantage is to “analyze the way the order-related activities are carried out” (Gunasekaran et al. 2001, p. 73) through the notion of lead time. To a certain extent lead time represents the latency between the initiation and execution of a process.

The Libet's experiment set up the conditions to integrate the time as a significant element of his research. In his investigation of free will and human consciousness, Libet (2005) was aware of the

necessity to bear in mind that time is plural and had a meaningful influence on his experiment. He pointed out that adopting the subjective time lens was required to draw meaningful conclusions from his investigation.

Shipp and Cole (2015) identify timing issues that may summarize at which extent time may contribute to theory, research and practice: (1) ‘Timescales’ as the size of the temporal intervals, whether subjective or objective, used to build or test theory about a process, pattern, phenomenon, or event”. (2) ‘Duration and rate’ referring to the length of time that a construct, event, or process lasts in a steady state, and rate refers to the speed at which these phenomena may last. (3) ‘Patterns of events and processes’: trajectory or shape of constructs, events, or process over time – characterized as stable or unstable, growth versus decline, ongoing versus recurrent. (4) ‘Scheduling’: the location (time and day) of an event on a calendar, which creates temporal boundaries for events and make action predictable.

(5) ‘Synchronization’ that may refer to “the process by which individuals manage multiple tasks in a predictable pattern”. Finally, in his original research, Whetten (1988) examine the impact of time on organizations, underscoring that timing issues may have negative impacts on organizational activities.

Directions for Future Research

The previous section demonstrates that given the event or process observed, adopting particular temporal lens may bring forth different dimensions of that observation; and therefore “each lens suggests a different set of practices and solutions to managers” (Ancona et al. 2001). The following part put forth unprecedented research that has conceptualized or define specific time or time-related constructs to renew actual theorization.

Recent Developments

In all the time, the survival of organization is intrinsically linked to the tradeoff between balancing the need for exploration and exploitation. The reason is because the demands of today differ

from the needs of tomorrow (Smith and Lewis 2011). Balancing short-term and the long-term is fundamental to business sustainability. In the context of climate change, Slawinski and Bansal (2015) cope with this problem by looking at the intertemporal tensions (short term. v. long term orientation) drawing from economic short-termism research and business sustainability literature. They find out that companies tend to focus on the short term at the expense of the long-term but companies who “juxtapose short-term and long-term” gain a better understanding of the complexity of their environmental context and may have superior likelihood of surviving.

Bakker et al. (2016) contend that focusing on processes and activities across organizational and not strictly contemplating organizational structures and forms may offer major opportunities to study time and temporality. This came from the foundations of previous research (Clark 1985) that put forth that different time metaphors, within a single organization, may lead to conflict. Dubinskas (1988) validated that temporal conflicts are the result of differential in feedback cycles between departments and functions across the organization. Bakker et al. (2016) explore the concept of temporary organizing that “captures the activities and practices associated with collectives of interdependent individual or corporate actors who pursue ex ante agreed-upon task objectives within a predetermined time frame” (p. 2).

In organizational learning theory, scholars have emphasized a linear perspective of time and might have failed to explain the adaptative process and the capabilities developed by organizations. Organizational learning is put at risk when time delays between decisions and outcomes span beyond the terms of key decision makers (Luoma et al. 2016). Following this concern Schmitt and Klarner (2015) develop a dynamic framework of organizational entrainment to environmental changes that “emphasize the importance of a cyclical time perspective for firm’s long-term adaptation”. They demonstrate that changing the ontological view of time put forth the organizational absorptive capacity gained over time

when facing external changes. In the same order, Touskas & Chia (2012) think that an ontological turn is needed because change is by nature processual and could only be apprehended “from within the flow of experience” (Langley, and Tsoukas 2016).

Bleijenbergh et al. (2016) identify four dimensions of timing ambition as follows: (1) “timing ambition over the course of a lifetime”, (2) “timing in terms of the number of weekly hours worked”, (3) “timing in terms of overtime hours worked”, (4) “timing in terms of visible working hours”. To attest that part-time workers’ career development may be disrupted by institutionalized norms, they consider them as dynamic and contextual temporal structures. Looking at these norms from a practice-based view, they show how organizational processes are ambivalent by both restricting and enabling part-time workers’ career development depending on how these temporal structures are set.

In his thesis D’Mello (2015) review the concept of polychronicity¹ among new venture teams offering a meaningful review of how this concept has influenced multiple fields over time. Military strategy (sequential attack v. multiple ongoing battle), decision speed, job satisfaction, productivity, organizational learning, these topics has been and may be further approached by scanning through a temporal lens.

Corporate capital is based on time horizon. In this optic, Reilly et al. (2016) investigate the weight of time horizon on resource allocation. He reveals that time horizon tensions in resource allocations emanate from two distinct elements: risk and uncertainty. In the field of strategic management, Kaplan and Orlikowski (2013) develop a strategic framework of temporal work to “articulate how actors resolved differences and linked their interpretations of the past, present and future so as to construct a strategic account that enabled concrete strategic choice and action”.

Reinecke and Ansari (2015) suggest the term ambitemporality² (drawing from notions such as ambidexterity (O’Reilly and Tushman 2013)) to represent the accommodating process against

opposing temporal orientations. Drawing from a practice-based view of time, they showed the inconsistency of a clock-based temporal structure and suggest that a processual lens may foster breakthroughs of how to manage time paradoxes while setting organizational goals. (Biesenthal et al. 2015) define temporally complex projects as the difference in temporal alignment and orientations among different projects and different stages of projects. They claim that organizations endure temporal conflicts.

Besides potential benefits resulting from competitive behavior may take time to materialize. Research has focused on the immediate economic consequences of time delays. The effects on longitudinal patterns of competitive interaction have not often been studied (Luoma et al. 2016). This time delay hinders managers to learn from anterior investment decisions. Luoma et al. (2016) develop a “computational model of dyadic rivalry to examine how time delays in competitors’ feedback influence their learning”. This framework shows that organizations that possesses a slow implementation phase of competitive actions are more inclined to be outperformed by its faster competitor. Strong findings are put forth in this research. First a short execution delay permits better profits for firms who directly compete with their rivals. Secondly, greater the industry-wide time delays are, greater the overall industry profits may be. “Learning acting as a barrier to escalating profit-destroying competition” (Luoma et al. 2016, p. 16).

(Asimakou 2015) explore the potentials of subjective time to structure work in knowledge organizations. He underlines that time may be addressed for innovation processes to explore ‘linear metaphors of time’ hold in radical innovation processes.

Lastly, to broaden the example scope, Fleischer (2013) fill the gap of studying time in crisis management that has received so far limited examination. As a political scientist, she brings into focus time-centered research perspective on governmental crisis response. To illustrate the dynamics of temporal relationships, she uses an

objective- and subjective-based view of time to analyze how temporal dimensions influence governmental crisis responses. This temporal contextualization shows that political decision-makers use time to navigate through critical situations. Fleischer's (2013) research is a good example of the use of subjective time in politics as she discusses ‘time tactics’ (timing, sequence, tempo) that political actors can exploit to manage situational crisis.

Remaining Gaps of Knowledge

From these recent developments remain some gaps in knowledge that need to be addressed. A serious instance of that is in the field of complexity science which as expressed by Anderson (1999): we need to catch “how behavior of an agent at time t influences the behavior at time t (or at time $t+1$). Besides (Ancona et al. 2001, Hernes et al. 2013, Orlikowski et al. 1999) call for future research to attack the problem of looking at processes as atemporal and static. They suggest that a “snapshot-like” measurement is not relevant to appreciate the temporalities that affect each situation observed.

Slawinski and Bansal (2015) reveal that scholars have neglected the topic of intertemporal tensions in the business sustainability literature. Drawing from economics studies on intertemporal choice, intertemporal tensions represent the temporal features of the tradeoff between business and society. To the same extent, organizational scholars still have limited comprehension of how executives interpret and evaluate time (temporal orientation) to shape their strategic choices (Nadkarni et al. 2016).

In Decision Theory, scholars resumed the different temporal factors that affect a person’s individual preferences to optimize their well-being (utility function) under the notion of time preference (or time discounting) – (for a review on this topic, Frederick et al. 2002). Decision makers ignoring their temporal orientations are therefore misled in their strategic choices due to the incapability to apprehend the concepts of time involved in competitive behavior (Das 2004).

In W&O Psychology, little has been dedicated to the fact that processes happen in time and evolve over time. Even if Navarro et al. (2015) are engaged in developing theory related to time, no existing research has considered that the direction and magnitude of theorization may fluctuate over the span of months, and even years (Shipp and Cole 2015). *Are theory and research designed to persist over time or are they temporary investigations?*

Regarding the cognition aspect of organization, Mohammed and Alipour (2014) convey that temporal dynamics have been marginalized in the cognition literature whereas time should be at the fore front by incorporating temporal referents in cognition. It follows Schmitt and Klarner's (2015) findings claiming that we have little understanding on how organizations attempt to adapt to complex dynamic environment.

On more time-centered topics, Kaplan and Orlikowski (2013) claim that organizational scholars lack of knowledge of the why and the how some linkages between the past, present, and future take place and some give away; but also "why some lead to status quo and others produce change" (p. 1). Lastly, at the theoretical level, Bakker et al. (2016) contend that multilevel research design, longitudinal quantitative studies and longitudinal across-project case studies are still unexploited.

Current Goals of Studies

Long-term planning is barely impossible. *How long is the long-term?* For firms and industries, the relationship between uncertainty and time is less clear. The difficulties to predict long-term outcomes and the possibility of sudden change are significant questions for future research. Is it possible that many industries will remain quite stable over a 5 or 10-year horizon and that industries currently in a turbulent state will become more stable as technologies and markets mature? Reilly et al. (2016) suggest to improve understanding of the role of time horizon, especially regarding widely held but untested beliefs such as empirical knowledge of outcomes related to investment horizon. To investigated constructs, we must assume to hold time horizon

characteristics. In this optic, he proposes more precise definitions and better measurement of empirical evidence to support this theorization, and more prescriptive framework to focus on the expectations into resource allocation models.

Kaplan and Orlikowski (2013) advise to put the interest upon "how actors make interpretive links in time, as this significantly shapes organizational choices and actions" (p. 30). On a larger picture, they also consider to modernize how time is broadly treated in strategic management research.

Reinecke and Ansari (2016) call for examining how people experience, use and relate to time. This may be done through the exploration of how organizational participants cope with temporal dimensions and instate them along their daily activities.

Shipp and Cole (2015) suggest to consider both objective and subjective time, to put time as a "focal construct" and not to simply as a feature of research. Specifically for a process time view, organizational scholars need to take temporality seriously to capture the temporal structuring or dynamic of process (Hernes et al. 2013, Langley et al. 2013, Reinecke and Ansari 2016), because understanding how these processes evolve over time may fruitfully inform research. For instance, we may clock-time while evaluating the implications of process-time to assess how the these conceptions impacts differently organizational participants contingently to the organizational context (Reinecke and Ansari 2016).

Organizational participants have to adapt to different temporal orientations (Biesenthal et al. 2015); and organizational actors must cultivate their temporal intelligence (Doyle 2012). In this regard Nadkarni et al. (2016) invite to explore the process through which executives develop temporal ordering and sequences of rules, e.g. pacing, time constraints, and attitudes towards deadlines (Zellmer-Bruhn et al. 2001), to hinder or promote competitive behavior. They invite therefore to study the linkages between the executive temporal orientations and the firm strategies in different environments. In this competitive landscape, temporal forces affect the

participant's behavior. *What are these temporal forces that affect our competitive behavior in a context-dependent environment?* These industry-level temporal forces may, for instance, take the shape of the industry velocity (time windows of opportunities), or the innovation rate. Temporal forces are also present within organizations. For instance, actions taken by individuals create timing, and intensity (Nadkarni et al. 2016). Starting at the individual-level of analysis, we should inquire into the temporal characteristics that contribute to executive temporal orientation (or temporal leadership) and investigate how managers perceive time (Mohammed and Alipour 2014). In the same vein W. Ridge et al. (2014) urge to deep dive in how temporal myopia (inability to consider the long-term outcomes of an action when making a choice) influence the executive competitive behavior. A good starting point for scholars is to examine when people do what they do in practice and “under which conditions actors choose to enact either clock-based or event-based temporal structures” (Orlikowski and Yates 2002, p. 690). By their day-to-day initiatives, individuals and groups generate temporal structures, it might be therefore valuable to look at how groups synchronize their activities to be more effective using this practice-based view of time.

Bringing together executive temporal orientation and synchronization across organization through the notion of temporal structures, Mohammed and Alipour (2014) suggest to put the interest on time-related issues that set the context for teams. Few theoretical frameworks linking time and structures together (Peters et al. 2012) have been proposed.

Following this paradigm (Orlikowski and Yates 2002, Peters et al. 2012) suggest to use structuration theory for business interactions to address more directly the unit of analysis and approach how temporal structures emerge and become – taking into account that agency is in itself temporal and in exchange with the temporalities of its environments (Emirbayer and Mische 1998).

Organizational change scholars have noted that we need to experiment and gather identifiers on

how mechanisms such as organizational learning, knowledge management and accumulation of experiences occur and evolve over time. The strategic equilibrium over time for an organization is a combination of frequent small changes made in an improvisational way that occasionally cumulate into radical strategic innovations, changing the terms of competition fundamentally. Berends and Antonacopoulou (2014) identify thematic subjects such as the ‘speed of learning’, ‘the role of forgetting’, and the tradeoff between accumulating experiences versus spending more time on the conversion of experience into practice. Additionally, Pettigrew et al. (2001) call for more research of time, sequencing, and pace in the field of organizational change processes. Any changes imply adaptation, the issue is where, when and how.

Schmitt and Klarner (2015) want to focus on how firm can adapt enduringly despite the recurrent change of top management teams. It also implies the perennial tradeoff between ambidexterity (conversing the past versus embracing the new).

Even if we believe that these calls will provide positive approaches to improve our understanding of managerial experiences, what if, even to apprehend the world of practices, one need to fully incorporate time in a theoretical manner. Navarro et al. (2015) invite to reconceptualize subjects of interest to see beyond the cross-sectional designs and analyses based on the established linear model. But thinking about the time frame of research must not only reflect the phenomenon observed. Shipp and Cole (2015) affirm that the scope of observations should also be based on how organizational actors integrate and reconsolidate experiences to discern when the object of study emerges and terminates. Any theory should specify what the lags between cause and effect, than can wear off over time (Gielnik et al. 2014). Investigate these time lags and why we have to expect such lags may be valuable to appreciate the impact of time across theorization. Bakker et al. (2016) explain in detail how looking at forms, tasks, and different levels of analysis across managerial practices may enhance our comprehension of temporary

organizing (e.i., temporary activities, allocation of resources, employment, projects). This lead us to consider and pay more attention to the notion of emergence and the dynamic of events and processes (Hernes et al. 2013).

On an overall basis, we need conceptual work that explicitly address time issues across organization and that make time the central focal point around which theoretical work take root (Sonnentag 2012). Scholars need to consider that time may not just advance our methods but that the study of time itself may advance our theories by offering new directions (Shipp and Cole 2015).

Discussion

“Time can be defined in numerous ways, and it is one of the basic ontological presumptions existing in reality (space being the other). Time, however, is a tricky term to define and even more problematic to understand” (Hedaa and Tornroos 2008, p. 326). Time has been a linkage for many disciplines to advance the research, e.g., T. Hägerstrand conceptualized time geography – a time-related integrative framework. This kind of initiative brings together diverse social sciences. Das (1990) understood this interdisciplinary character and aggregated the main research incorporating the time dimension in a reference book. Blyton et al. (1989) provided an insightful handbook underlining the mainstream time-related research. To illustrate this point, Nadkarni et al. (2016) examine the role of executive temporal orientation through the concept of temporal depth conceptualizing the construct of executive temporal depth. The notion of temporal orientation refers to ‘future time perspective’ that captures variation across individuals (Das 1987). It is a result of social construction that varies across cultures (Bluedorn and Denhardt 1988). This concept was analogously used by (Hofstede 1993). We see that one time-related concept may contribute to a plethora of fields of study. A.C. Bluedorn was, at first, a sociologist who has taught organization behavior and move to business management. He is one of the most cited authors on time-related papers, especially for his *temporal depth index* which

measures an individual’s past, future, and comprehensive temporal depth – temporal distance into the past and the future that executives consider when contemplating events that have happened or may happen (Bluedorn 2002). In the same vein, time-use research is an interdisciplinary field of study looking at how people allocate their time during an average day.

We saw drawing from these examples that meaningful time-related research requires cross-disciplinary investigations. *In this optic, is there a need for a separate field of study focusing on time across organizational research* – with scholars acting as ‘temporal ambassadors’ (Shipp and Cole 2015), “wherein they bring specific ideas about time back into their respective research domains” (p. 241).

This collaborative initiative may put forth systematic temporal research reviews to determine which research questions have been addressed and which ones remain unanswered. This discipline may, on its own initiative, decipher many timing issues that are waiting to be treated by researchers engaged in the theoritization of time-dependence research.

Dawson and Sykes (2016) insist on the needs to accelerate the examination of time in management research and time-related debates in organizational sciences. In this matter, over the time, diverse institutes and initiatives have emerged, not necessarily related to the field of management, but that have studied how time perception affect behavior. “Temporalité” – a French social sciences journal initiated by W. Grossin; “Laboratoire Professions, Insitutions et temporalités” – an interdisciplinary French research laboratory; “The International Society for the Study of Time” – an interdisciplinary seminar established by J. T. Fraser; and “Time and Society” – a multidisciplinary peer-reviewed journal.

Lastly, in 2001, The Academy of Management Review (ARM) announced a special issue consecrated to time across organization sciences stressing the immediacy of addressing time issues. More recently, the Scandinavian Journal of Management (SJM) hosted a special issue focusing

on “the processual nature of managing and organizing” offering process-based interpretations of time (Hernes et al. 2013). As we can see, time and temporality issues in social sciences have historically been greatly debated. Peters et al. (2012) outline that it may serve as a pathway to conceptual notions from general sociological theorizations and reciprocally that time may also be one of the features to the way of addressing the interaction between agency and structure.

It is well admitted that structuration theory has permitted to enhance understanding of processes and time through the conceptualization of the relation to agency and structure while integrating temporal dimensions of organization (Peters et al. 2012). Emirbayer and Mische (1998) also suggest that agency results “from a temporally embedded process of social engagement”, drawing from the past but also aiming at the future of possibilities while accommodating contingently to the present. Stronger affiliation with social sciences may benefit to both fields of study. “Developing models about the processual dimensions of business networks may benefit from taking an excursion into social sciences explicitly focusing on time” (Hedaa and Tornroos 2008, p. 320)

Time issues should be tackled by more scholars from different fields of studies. Such domain-specific field dedicated to time may contribute to both sides of the perennial debate that time is supposedly “a medium for change” or a provider of context (Shipp and Cole 2015).

Another contribution may be to bring together a range of articles by authors who have undertaken the difficult task of researching time through field-specific investigations. It will provide a reference to time and temporal aspects (Navarro et al. 2015) to describe organizational life. It will both assist theoretical inquiries and empirical research to gather data at appropriate times. Gielnik et al. (2014) provide some directions about how future conceptualization and advancement should incorporate time (Sonnentag 2012).

Finally, the overall purpose of this field may be to systematically synthesize research on time in organization studies, and to develop replicable

studies and measures of temporal features. The outcomes may help to describe the inquiries and find tools to solve complex managerial conflicts involving timing issues. To develop an agenda for future research and to help to move from micro-organizational research to a comprehensive temporal view, we must examine the current state of extant conceptualizations of time in diverse fields of study.

Time marches on and some the calls have not been answered. “Time is still esoteric and far from becoming common knowledge” (Fried and Slowik 2004, p. 405) (Sonnentag 2012). Bakker et al. (2016) make clear that we have shifted from a need to understand the impact of formal structure, towards a need to understand the impact of activities and processes. Temporal structuring (practice-based view of time) and the needs to study time in use (Orlikowski and Yates 2002) is part of the solution to the remaining gaps in knowledge.

Hernes et al. (2013), inspired by American Pragmatism such as G. H. Meads’ development about the inherent uncertainties and contingencies of managerial life as well as Whitehead’s (1930) idea that: “There is time because there are happenings, and apart from these happenings there is nothing” (Atmanspacher and Ruhnau 1997, p. 375), invite into the analysis of managing and organizing in time.

In practice, the main dimensions of time may assist to apprehend how time is explicitly and implicitly in a specific organization. For instance, subjective perspectives of time in strategic management show that executives temporal orientations mold expectations and evaluations of decision situations and choices (Ancona et al. 2001, Bluedorn 2002, Das 1987). But there is a difficulty in studying personal goals, projective action (Mische 2009), and to link intentions across interpretations of the past, present and future that make action possible. Yet the passage of time is necessary to experience and discern when a phenomenon evolves or changes (Roe 2009). If theoretical study claims to be atemporal, scholars would have to justify. Do not neglected time otherwise and put time on center stage by

specifying new temporal constructs and time-sensitive processes.

New practice-based theory of time awaits to be challenged by stronger process views to move from optimization and ‘success factors’ to adopt contingency and comparative perspectives at multilevel (Bakker et al. 2016). There will always have room to improve research by making more explicit time-related conceptual framework (Sonnentag 2012). It is time to better incorporate organizational temporalities in research and to apprehend temporal dimensions of organizational life that are mutually intertwined.

Conclusion

In this review, time has been addressed in relation to organization studies and organizational research. First we considered the most used theoretical perspectives of time in organization sciences. Secondly, this paper posited the properties of time in organizational research design and methods, and its consequences for organizational scholars, life and participants.

Following the implications of time for organizational studies, we propose a synthesis of the directions for future research by capsulizing the original time-related research and investigations. We highlighted calls issued from several scholars that are still awaited, and aggregated the current goals of studies.

We put forth the idea that this field can gain a lot by paying more attention to time issues that emerge across the organizations.

Furthermore, we suggest an interdisciplinary and domain-specific field of study dedicated to time and temporality across organization to contribute to enhance our understanding of processes, activities, and human behavior. Finally, this study has provided insights into the formalization, use, and influence of time in organization studies.

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Endnotes

¹“Polychronicity refers to the people’s preference for working on more than one task or events simultaneously or have the tendency to switch back and forth among different activities” (D’Mello 2015).

²“A process where paradoxical tensions are continuously being reworked through confrontation, reflexivity, and adaptive innovation” (Hargrave and Van de Ven 2006).

³“A Sense making can be viewed as a recurring cycle comprised of a sequence of events occurring over time. The cycle begins as individuals form unconscious and conscious anticipations and assumptions, which serve as predictions about future events” (Weick 1995).

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