

**THE TIME IS RIPE!**  
**USING TIME CONCEPTUALIZATIONS TO ADVANCE**  
**RESEARCH ON INTERORGANIZATIONAL RELATIONSHIPS**

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## **ABSTRACT**

Time and temporal aspects are at the core of how interorganizational relationships succeed, or fail, to create value. We argue that the use of multiple conceptualizations of time (e.g., clock time vs. phase time) aids to advance research on the temporal complexity that unpins the functioning of interorganizational relationships. We identify research strategies to advance research on four domains of interorganizational relationships: co-existence of time concepts; evolution; temporality; and time contingency. We discuss empirical challenges alongside specific suggestions to advance theory on interorganizational relationships. We further discuss research opportunities to unpack how time-related tensions are nested across levels of analysis and temporality entails a strategic resource in interorganizational relationships.

**Keywords:** Cooperative strategies; interorganizational relationships; temporality; time.

Organizations increasingly enter interorganizational relationships (IORs) as a strategy to attain competitive advantage. IORs range from alliances to R&D consortia and buyer-supplier relationships (for reviews, see Majchrzak, Jarvenpaa, & Bagherzadeh, 2015; Parmigiani & Rivera-Santos, 2011). Despite extensive research on the formation, maintenance and cessation of IORs, management scholars have paid relatively little attention to temporal issues in IORs (Ahuja, Soda, & Zaheer, 2012; Lumineau & Oliveira, 2018). By following a monolithic notion of time, much of empirical research overlooks the temporal complexity of IORs. However, cycles, events, and stages underpin the operation of IORs (Koza & Lewin, 1999; Ring & Van de Ven, 1994). We address this shortcoming by providing specific strategies for the use of multiple time conceptualizations (i.e., the ways to form an idea about time) in order to unlock many opportunities to advance research on the temporal complexity of IORs. We discuss how the use of multiple conceptualizations of time (e.g., clock time *vs.* event time) allows management scholars to gain a better understanding of the dynamics underlying the operation of IORs.

Time is at the core of IORs. These relationships occur over time where at least two organizations work together to achieve individual objectives and agreed-upon common goals (Das & Teng, 2000; Oliver, 1990; Ring & Van de Ven, 1994). IORs typically last for the development or commercialization stage of a specific product or service. An enduring question to the literature concerns how organizations create and share value, or fail to, for the duration of the IOR. Therefore, researchers have shown a growing interest in time-related issues, such as the genesis of network dynamics (Ahuja et al., 2012), collaboration dynamics (Majchrzak, et al., 2015), or evolution processes of interorganizational networks (Bizzi & Langley, 2012). At the same time, these reviews indicate that much of the literature has focused on clock time. The use of clock time is indeed instructive to examine a wide array of issues, from the duration of IORs to the evolution of IORs over long periods.

However, the dominant focus on the clock time conceals the temporal complexity of how organizations continually interact in IORs. Much of what organizations do to create and share value is deeply related to, for example, the product life cycle (i.e., life cycle time), critical events (i.e., event time), and in some IORs, it also relates to cyclical events, such as weather seasons (e.g., cyclical time) (see Ancona, Okhuysen, & Perlow, 2001, and Kunisch, Bartunek, Mueller, & Huy, 2018). Partner organizations jointly carry out interdependent tasks where time and temporal issues underlie their collaboration. Partners have to meet deadlines and often operate across industries with different cycles. Moreover, each partner's length of participation in the IOR may vary; some partners may join an IOR at specific stages of the product life cycle.

Furthermore, the operation of IORs is punctuated by tensions that are rooted in time-related aspects. For instance, parties can display conflictual time orientations (e.g., short- vs. long-term), senses of urgency, and abilities to meet deadlines (Das & Teng, 2000; de Rond & Bouchikhi, 2004; Van Berkel, Ferguson, & Groenewegen, 2016). Hence, we suggest that the use of multiple conceptualizations of time has much potential to unravel the temporal complexity of IORs. In this chapter, we show how a granular and multifaceted conceptualization of time aids researchers to unravel the ordering of actions in IORs, to disentangle taken-for-granted time dimensions, and to reveal the co-existence of different logics and priorities among partners.

We make three contributions to the management literature on IORs. First, we underscore the importance of multiple time conceptualizations to capture the temporal complexity of IORs. Specifically, we show how multiple conceptualizations of time help to theorize tensions underlying IORs. Second, we identify specific strategies for the use of time conceptualizations to advance research on four domains: co-existence of time concepts, evolution, temporality, and time contingency. Third, we discuss empirical challenges with an eye to provide actionable advice concerning data collection on time and temporal issues. Our discussion supports future empirical

research on the temporal aspects of IORs. Finally, we identify research opportunities concerning time-related tensions nested across levels of analysis and the theorization of temporality as a strategic resource in IORs. More broadly, we extend the growing literature on the use of time in empirical studies—which has focused on time measure (Zaheer, Albert, & Zaheer, 1999), process analysis (Bizzi & Langley, 2012), causality (Grzymala-Busse, 2011), or subjective conceptualization of time (Mosakowski & Earley, 2000)—by developing specific strategies to use multiple conceptualizations of time to study the dynamics of IORs. Broadly, our discussion of empirical strategies directly supports research on “the temporal dimensions of the tensions directly inherent in strategic change [which] have rarely been addressed” (Kunisch et al., 2018: 1049).

## **THE RELEVANCE OF TIME IN INTERORGANIZATIONAL RELATIONSHIPS**

In this section, we synthesize the literature on time and temporal issues concerning the dynamics of IORs. We contrast the dominant view of conceptualizing time (i.e., clock time) in existing research with the extended view proposed in this chapter that foregrounds multiple conceptualizations of time (e.g., life cycle time and event time).

### **Time in Interorganizational Relationships: Dynamics and Temporality**

Time is an essential aspect of IORs, by definition. For instance, Oliver (1990: 241) defines IORs as “*relatively enduring* [emphasis added] transactions, flows, and linkages that occur among or between an organization and one or more organizations in its environment.” Organizations work together over time to create value (Ahuja et al., 2012; Koza & Lewin, 1999). The relevance of time in IORs is equally underscored in the seminal work by Ring and Van de Ven (1994: 90) that addresses the question: “how do these IORs *emerge, grow, and dissolve* [emphasis added] over time?” Furthermore, the literature on coordination of IORs emphasizes time-based structures (e.g., plans, schedules, and deadlines) (e.g., Ballard & Seibold, 2003; Hassard, 1991; for a review, see

Bakker, 2010). It is therefore little surprise that time has received growing attention among researchers seeking to advance research on (a) the dynamics and (b) the temporal issues of IORs (Ahuja et al., 2012; Bizzi & Langley, 2012; Majchrzak et al., 2015).

Research on the dynamics of IORs largely concerns how organizations form, maintain and cease relationships (Koza & Lewin, 1999; Ring & Van de Ven, 1994). Prior research has developed into two research streams that provide contrasting perspectives about the nature of the evolution process of IORs. A stream of research foregrounds an engineered process of evolution where managers directly orchestrate the IORs over time. For example, Paquin and Howard-Grenville (2013) present an exemplar study on how the UK's National Industrial Symbiosis Programme (NISP) assembled and managed an interorganizational network of manufacturers across industries; this network came together to reduce industry waste and identify by-products for unwanted materials. Findings from studies of buyer-supplier relationships (Capaldo, 2007; Dyer & Nobeoka, 2000) and R&D consortia (Dhanaraj & Parkhe, 2006; Doz, Olk, & Ring, 2000) show that engineered processes can lead to robust and lasting IORs.

Yet, another stream of research draws attention to a spontaneous process of evolution where managers react to unforeseen events in the IOR. For instance, Van Marrewijk et al. (2016) show that organizations working in the construction of the Panama Canal continually reacted to project events and political struggle among stakeholders. The evolution process of IORs reflects conflicts, contradictions, and tensions between organizations (de Rond & Bouchikhi, 2004; Mitev & Venters, 2009; Moretti & Zirpoli, 2016).

A growing literature also examines the temporal aspects of IORs. Temporality refers to the influence of the past on present actions ("shadow of the past") and the influence of future on present actions ("shadow of the future") (Janowicz-Panjaitan, Bakker, & Kenis, 2009).

Temporality manifests outside and within an IOR. Outside an IOR, organizations are embedded in

past actions and future orientations in their industry and national environments (Greenwood & Hinings, 1993; Jones & Lichtenstein, 2008; for an overview, see Burke & Morley, 2016). In a study of projects in Australia's mining industry, Bakker and Knoben (2014) show that managers take into account the time horizon when forming alliances. The operation of IORs in the present is influenced by partners' past ties and the prospect of future ties (Jones & Lichtenstein, 2008; Manning & Sydow, 2011; Sydow, Schüssler, & Müller-Seitz, 2016).

Besides temporal aspects outside the IOR, temporality within the IOR (i.e., past, present, and future actions) intrinsically relates to value creation during the IOR. Each partner is required to carry out specific tasks in a timely manner to prevent disruption and delays (Janicik & Bartel, 2003; Hassard, 1991; Masten, Meehan, & Snyder, 1991). Temporal aspects are of essence for timeliness coordination between parties across stages of, for example, product development and commercialization. Temporal issues within the IOR concern how long events take (duration), how fast these events change during the IOR (tempo), whether these events speed up or slow down (rate), and when the events occur (timing) (Grzymala-Busse, 2011).

### **Time Conceptualizations: Unpacking the Temporal Complexity**

Time being a multifaceted construct, understanding the dynamics and temporal issues in IORs hinges on thoughtful conceptualization of time. Building on prior research (Ancona, Okhuysen, & Perlow, 2001; Cropper & Palmer, 2008), we discuss four conceptualizations of time useful to capture the temporal complexity of IORs: clock time, cyclical time, event time, and life cycle<sup>1</sup>.

*Clock time* is conceptualized as a continuum where the passing of time occurs in a linear and infinite way. Clock time is measured in objective units (e.g., days and years). For example, a firm's financial activities are organized—and largely defined by—the financial year and payments due dates (e.g., processing of salaries). Breaking away from the linear progression of clock time,

*cyclical time* denotes the repetition of instances on an ongoing basis (Ancona et al., 2001). For example, the weather seasons (*cyclical time*) are a key factor on buyer-supplier relationship between farmers and supermarkets. *Event time* concerns specific occurrences that alter the operation of IORs. In a franchisee-franchisor relationship, a typical example of event with a bearing on the IOR is a specific opportunistic behavior by one of the parties. Finally, *life-cycle time* denotes a relatively predictable pattern of development. In technology alliances, a new product follows a generic cycle: design; prototyping; production; and launch.

The multifaceted concept of time is built into the setup of IORs. Besides clock time that has received extensive attention in past research, a thorough understanding of the operation of an IOR requires an examination of several conceptualizations of time (e.g., event time and cyclical time). Figure 1 illustrates two ideal-type approaches to the study of time in IORs: the use of clock time only (conventional approach) vs. the use of multiple conceptualizations of time (the approach advocated in this chapter). We are concerned that IORs display great temporal complexity that is often ignored. For example, in a consortium to build public infrastructure (e.g., a new hospital or a bridge), organizations share a notion of clock time, but weather seasons (i.e., cycle time) and project milestones (i.e., event time)—such as completion of the foundations—also influence the extent to which organizations create value during the project. The weather influences the progress of works. Delays due to inclement weather or geological conditions are highly likely to add pressure on individual organizations to accomplish their tasks on time and develop a timely recovery plan so that the project delivery is not compromised. In this example, the exclusive focus on the linear passing of time provides an incomplete perspective into the practices of time management in interorganizational projects.

In contrast to research on organizational change (for a review, see Kunisch et al., 2018), it is somehow surprising that empirical studies of IORs is yet to take advantage of the literature on



multiple conceptualizations of time. For example, Majchrzak et al. (2015) identified only 22 articles on interorganizational collaboration dynamics and Lumineau and Oliveira (2018) underscored the paucity of research on temporal aspects in IORs. Limited data availability and data collection costs may justify the lack of research on the temporal complexity of IORs. While these concerns are valid, we take a slightly different view in that we argue that much advance on temporal aspects is achievable using currently available data. Rather, a shortcoming is the dearth of a discussion on strategies for the use of multiple conceptualizations of time to advance research in specific aspects of dynamics of ORs. Despite instructive discussions on measures of time (Zaheer, Albert, & Zaheer, 1999) and the role of time to make causality claims (Grzymala-Busse, 2011), extant research lacks a set of strategies that can support researcher's efforts to advance research on dynamics and temporal issues of IORs. As we discuss next, such strategies could support researchers to advance research on the mechanisms underlying the dynamics of IORs, to disentangle taken-for-granted time dimensions, and to unravel the co-existence of different logics and priorities among partners.

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## **STRATEGIES TO STUDY TEMPORAL COMPLEXITY IN INTERORGANIZATIONAL RELATIONSHIPS**

In this section, we discuss how the use of time conceptualizations aids to unravel the dynamics that characterize IORs. We thus move on from conceptual discussions of time in IORs (e.g., Cropper & Palmer, 2008) to provide practical suggestions to integrate multiple conceptualizations of time in research about IORs. We also attend how time and temporal issues

can shed light on tensions—anomalies that account for ambiguities and incongruent elements in an IOR—widely reported in the literature on IORs. The use of multiple conceptualizations of time enables researchers to capture the temporal complexity of IORs and, in turn, to develop a better understanding of many aspects about the functioning of IORs.

To advance our understanding of IORs, we discuss how the use of multiple conceptualizations of time contribute to advance research on four domains: co-existence of time concepts; evolution; temporality; and time contingencies. Accordingly, we identify four specific research strategies: concept-oriented; evolution-oriented; intertemporal-oriented; and contingency-oriented. Table 1 shows an overview of these four strategies. Below, we discuss each of these strategies, exemplar studies, and new insights that each strategy affords.

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### **Concept-Oriented**

The first strategy refers to the use of multiple conceptualizations of time as a basic feature of the analysis and contribution. Many research opportunities refer to bringing together clock time with the analysis of other types of time. Concept-oriented strategies are particularly suitable to extend past literature about the passing of time in IORs by adding temporal granularity (e.g., the inclusion of product stages, or the examination of critical events) to research on key issues in IORs (e.g., future opportunism by a counter-party; and knowledge sharing between parties). The combination of time conceptualizations (i.e., clock, cyclical, event, and life cycle) varies according to the specific research objectives, theoretical framework and empirical setting. Below, we

introduce six pairs of time conceptualizations with a discussion of exemplary studies and the benefits associated with their use of a concept-oriented strategy.

***Clock Time & Life Cycle Time.*** A simple strategy to advance research on the dynamics of IORs has been to show how the passing of time (i.e., clock time) relates to general stages of activities and processes in IORs (i.e., life cycle time) (Davis & Eisenhardt, 2011; Doz, 1996; Huxham & Vangen, 2000; Jap & Anderson, 2007). For example, Jap and Anderson (2007) study long-term relationships between buyers and suppliers (sample average: 17 years) alongside four different stages of these buyer-supplier relationships (i.e., exploration, build-up, maturity, and decline). By adding life-cycle time to their analysis, the authors were able to unpack the relative importance of (1) dependence between parties, (2) idiosyncratic time investments, (3) adaptation investments of existing routines, and (4) bilateral idiosyncratic investments in each stage of the buyer-supplier relationship. The joint analysis of clock time and life-cycle time enables research that advances theory on, for example, managers' perceptions of the amount of relational investments at each stage, and how they make decisions about investments—and expected returns—in subsequent relationships.

***Clock Time & Event Time.*** Other studies combine clock time and event time to theorize how specific events influence the dynamics of IORs. Qualitative and quantitative event-based analyses of the dynamics of IORs provide a typical application of the joint use of clock time and event time (e.g., Ariño & de la Torre, 1998; Berends, Van Burg, & Raaij, 2011; Robinson, Tuli, & Kohli, 2015; Singh & Mitchell, 1996). Robinson and colleagues (2015) provide an instructive use of an event-based analysis to advance theory on how the announcement of brand licensing (i.e., event time) triggers subsequent changes in the licensor firms' shareholder values over time (i.e., clock time). The joint study of clock time and event time has high marginal gains. It often entails low additional costs (e.g., to gather information on key organizational and market events to

complement existing industry datasets using clock time) while it brings about theory refinements concerning the role of specific events on the evolution of IORs. The joint use of clock time and event time can capture not only the role of event characteristics in IORs, but can also capture how the timing and sequencing of events influence the dynamics of IORs (e.g., goals and procedures).

***Clock Time & Cyclical Time***<sup>ii</sup>. The joint use of clock time and cyclical time is particularly helpful to develop theory about how the passing of time in IORs (i.e., clock time) relates to events that repeat over time (e.g., seasonal demand, and audits at the end of the financial year). For example, Lee, Hoetker, and Qualls (2015) use longitudinal data (by year) about alliances, but in their analyses they also include a control variable to distinguish between eight industry-based stages of the innovation process (stage 1 - discovery; stage 8 - Biologics License agreement/New Drug Application filing and Food and Drug Administration approval). The inclusion of different stages allowed researchers to develop more detailed and robust theory by accounting for the stage-specific task interdependence and collaboration dynamics between partners (e.g., bargaining power) over time. Similar to the pharmaceutical industry, other industries like construction (design and build), advertisement (campaign development) and tourism (development of package holidays) also follow general stages that structure the activity between organizations. These stages can be used to strengthen empirical analyses, as well as to develop theory about the dynamics between organizations with and across standard stages. Such theoretical insights would yield practical implications for managers about managing interorganizational relationships across stages (e.g., product development stages).

***Cyclical Time & Event Time***. Researchers may also examine jointly the concepts of cyclical time and event time (Ariño & de la Torre, 1998; Moretti & Zirpoli, 2016; Van Burg, Berends, & Raaij, 2014). In a study of buyer-supplier relationships of a Dutch aircraft manufacturer, Van Burg et al. (2014) bring together the concepts of event time (i.e., managers' decision to transfer

knowledge) and cyclical time (i.e., contracting cycle in the aircraft industry). Through a joint analysis of cyclical time and event time, the authors were able to advance our understanding of how managers deal with the tensions concerning the transfer of knowledge between suppliers working on the development of new technologies. Knowledge transfer typically entails a tension between opportunism concerns and the need to pool together knowledge to develop new products.

***Cyclical Time & Life Cycle Time.*** Other researchers have carried out joint analyses of cyclical time and life cycle time (Doz, 1996; Lipparini, Lorenzoni, & Ferriani, 2014). In a study of knowledge transfer in the Italian motorcycle industry, Lipparini et al. (2014) examine how cyclical time (i.e., cycle of industry contracting) is interconnected with life cycle time in product development in the IOR (i.e., each project has pre-specified start and completion dates). The authors integrate the concepts of cycle time and life cycle time into a detailed four-stage model that unravels how organizations deal with the tensions of product co-creation between suppliers. The joint use of cyclical time and life cycle time is uniquely suitable to develop theory on the underlying processes by which organizational members synchronize and develop interactional routines—or fail.

***Event Time & Life Cycle.*** In the strategy literature, event time and life cycle time are also sometimes brought together to develop theory on the tensions within the IOR. For example, scholars study how key events (i.e., event time) foster tensions throughout a pre-defined life cycle of the IOR (Inkpen & Pien, 2006). Where IORs are often time-bounded, the joint study of event time and life cycle time is particularly suitable to examine strategic decisions that have a bearing at each stage of the IOR. These decisions range from market entry to management of product life cycle or the entry or exit of partners in the IOR. More generally, the use of event time and life cycle time is fundamental to advance research on how managers actually manage tensions in IORs

(Sydow et al., 2016) as to harvest value from IORs (Greve, Rowley, & Shipilov, 2013; Gulati, 2007).

By adopting a concept-oriented strategy, a handful of researchers have managed a better understanding of the temporal complexity of IORs (Davis & Eisenhardt, 2011; Lipparini, et al., 2014; Van Burg, et al., 2014). Their studies can be used as examples, and the strategies discussed above suggest many research opportunities. To keep the analysis tractable, we only discussed pairs of conceptualizations. Of course, these strategies can be extended by combining more than two types of conceptualization of time in the same study. Overall, we showed that the use of multiple concepts of time enables granular analyses of how organizations work over time, generative knowledge about dynamics of IORs across repeated cycles, insights about the temporal elements that facilitate or hinder transition across stages of the production process, and better understanding about the consequence of specific events for the operation of IORs.

### **Evolution-Oriented**

By definition, evolution-oriented strategies concern the use of multiple conceptualizations to advance research on the nature of the evolution of IORs. We adopt an inclusive notion of evolution to refer to how and why IORs emerge and evolve (Ahuja et al., 2012; Davis, 2016) but also the changes that occur in IORs (e.g., goals, procedures, and composition of actors) (Majchrzak et al., 2015). Evolution-oriented strategies are instrumental to advance research on the engineered vs. spontaneous nature of the dynamics of IORs.

Researchers have used multiple time conceptualizations to explore the tensions faced by managers when working in IORs (Doz et al., 2000; Huxham & Vangen, 2000). One research strand studies the evolution of IORs as a spontaneous process. Scholars examine how the managers' actions influence tie dynamics so as to influence outcomes (Davis & Eisenhardt, 2011; Huxham & Vangen, 2000; Maurer & Ebers, 2006). In an exemplar study of emergent processes,

Davis and Eisenhardt (2011: 159) show that the innovation performance of start-ups in the telecommunication industry “involves dynamic organizational processes” alongside shifts of leadership among the different partners. The authors draw on event time (i.e., leadership shifts) and cyclical time (i.e., technology development stages) to advance research on a central source of ongoing tensions in technology collaborations: integration of management practices and production processes between partners. The joint use of multiple conceptualizations of time aids to build theory on the effectiveness of managers’ actions aimed to manage the temporal complexity inherent to any IOR.

A common implementation of the evolution-oriented strategy is to study engineered processes (e.g., Doz et al., 2000; Mason & Leek, 2008; Robertson, Swan, & Newell, 1996). This stream of research tends to use clear time-based markers such as product development stages (e.g., Robertson et al., 1996) and discrete events throughout the IOR (e.g., Mason & Leek, 2008). Here, the use of multiple conceptualizations of time aids the researchers to identify successful and unsuccessful strategies to address relatively known challenges faced at each pre-specified stage of the IORs (Pinto & Prescott, 1988; Oliveira & Lumineau, 2017). A large literature on project management is geared toward the development of practical advice on how managers can best manage specific events (i.e., event time) at each stage of the project (i.e., life cycle time) (for an overview, see Bakker, 2010).

The evolution-oriented strategy has also been applied to the study of temporal issues in IORs. By analyzing the thrust of temporal issues, researchers are able to tap into the processes that drive the evolution of IORs. The study of temporal issues has followed largely two views: linear (e.g., Heimeriks, Bingham, & Laamanen, 2015) and path dependence (e.g., Azoulay, Repping, & Zuckerman, 2010; Berends et al., 2011). The linear view is predominant in large studies of industry networks and alliances (Rosenkopf & Padula, 2008). In an exemplar study, Rosenkopf

and Padula (2008) examine the alliance network evolution based on formation announcements (i.e., event time) in the mobile communications industry between 1993 and 2002 (i.e., clock time). The authors create a dummy variable “time” (dummy by year) to control for unobserved temporal factors (e.g., legitimization and economic conditions). As the authors (2008: 678) detail the procedure, the variable time “ranges from zero to eight (with the default year being 1993), thereby assuming linearity in the effects of time.” Most econometric analyses combine clock time and event time to advance research on industry-wide dynamics of IORs by studying the extent to which specific events influence tie formation, or dissolution, among organizations (e.g., formation / dissolution of alliances).

Yet, other studies take a path dependence view to examine how events and decisions in the present are either enabled or hindered by the past. Lavie and Rosenkopf (2006: 802) observe that “the tendency to underscore either exploration or exploitation within domains can be ascribed to path dependencies.” In an in-depth qualitative study of two sequential alliances between the same firms, Faems et al. (2008) provide a detailed account of how tensions based on trust dynamics and the application of the contract in previous interactions influenced the evolution of interactions between the two alliance partners. In turn, their analysis highlights how relational dynamics in previous transactions influence the design of contracts in subsequent transactions between partners.

A growing literature has moved on to develop nuanced analyses of the nature of the evolution process of IORs. Building on a conceptual literature on tensions in IORs (Das & Teng, 2000; de Rond & Bouchikhi, 2004), management researchers have started to examine the dialectic tensions in the IORs (e.g., Hardy & Phillips, 1998; Van Marrewijk et al., 2016) and the dynamics of IORs using punctuated equilibrium models (e.g., Bakker & Knoben, 2014). Studies concerned with the dialectic tensions examine co-existing and contradictory forces that drive the dynamics of



IORs (Berends et al., 2011; Van de Ven & Poole, 1995). The dialectical view on the evolution of IORs foregrounds how the passing of time is characterized by unforeseen events, contradictory time orientations between partners, and dysfunctional timing of joint action between partners. Sharing the interest in capturing the temporal complexity of IORs, other researchers draw on the research on team dynamics to extend models of punctuated equilibrium (Gersick, 1991) to the evolution of IORs (Bakker & Knoblen, 2014). Studies using the punctuated equilibrium model show that the evolution process of IORs experiences pronounced instability in the early stage, but dynamics stabilize over time toward equilibrium (Bakker & Knoblen, 2014; McGinn & Keros, 2002). For instance, McGinn and Keros (2002) report that the transition between competitive and cooperative logics in negotiations undergoes punctuation but then converges toward equilibrium.

The evolution-oriented strategy focuses on how organization form, maintain, and cease ties. As we discussed through a number of exemplary studies, evolution-oriented strategies aid researchers to unravel the unfolding of action in IORs, such as tensions that drive the dynamics of IORs and the impact of specific events on changes in patterns of ties across stages of the IORs.

### **Intertemporal-Oriented**

This strategy refers to the use of multiple conceptualizations of time to unpack the temporal aspects defined in relation to specified periods (e.g., pre-contract and post-contract; pre-formation and post-formation of a joint venture). Intertemporal-oriented strategies aid researchers to study how managers and organizations operate the transition between at least two well-defined periods.

The literature on the shadow of the past and the shadow of the future exemplifies the tensions that underlie the intertemporal-oriented strategy in IORs. The shadow of the past refers to the influence of past relationships on present relationships. For example, several studies examine the role of past relationships on the formation and quality of relationships in the present (Gulati, 1995). It is worth noting that while early studies report a positive association between past

relationships and subsequent quality of the relationships and outcomes (e.g., Gulati, 1995), recent studies also show that past relationships might sometimes have negative impacts (e.g., Azoulay et al., 2010; Holloway & Parmigiani, 2016; Oliveira & Lumineau, 2019). For instance, Holloway and Parmigiani's study (2016: 460) of 580 partnerships in bridge construction projects shows that "a greater proportion of repeated partners and deeper relationships with these partners will result in greater revenue through winning bids, but that the prime contractor will not necessarily garner higher profits." To place a winning bid—based on the lowest total cost / lump sum—and maximizing the profits is a typical tension faced by organizations that operate in markets based in auctions (e.g., construction industry). Still, other studies examine the shadow of the future; that is, how the prospect of future transactions influences the current relationship between organizations (Mason & Leek, 2008; Poppo, Zhou, & Ryu, 2008). For instance, Lumineau and Oxley (2012) examine how the potential of future transactions influences present firms' behavior. They argue that the threat of losing future profits brings discipline into the buyer-supplier relationship and supports the development of cooperative norms among exchange partners. Their analysis actually shows that the firms' willingness to resolve disputes privately (in contrast to going to court) is positively influenced by the shadow of the future. Research on temporality provides an opportunity to develop theory on how firms' decisions are embedded in the temporal context, and how managers make decisions in relation to past and future events both inside and outside of the IOR.

Furthermore, we note that the intertemporal-based strategy often draws on *ex ante* or *ex post* stages. The first approach is based on *ex ante* stages by which we mean that the researcher designs the study based on multiple pre-defined stages. A stage is a pre-specified period that occurs in an expected way and is recognized by, for example, industry experts and managers. *Ex ante* stages range from the product life cycle—from conception to production—to market evolution—from a

nascent market to a mature market. The increasing number of in-depth studies about the evolution of IORs includes stages as part of their theorizing. We call these *ex post* in the sense that the researcher identifies the stages inductively.<sup>iii</sup> In an exemplar study, Maurer and Ebers (2006) inductively develop *ex post* stages as part of their theoretical development on the influence of the configuration, evolution, and organization of entrepreneurial start-ups' social capital on firm performance.

The use of multiple conceptualizations of time under an intertemporal-oriented strategy aims to develop theory about temporal aspects outside and within IORs (see Janowicz-Panjaitan et al., 2009). The underlying focus of analysis refers to the mutual influence of past, present, and future. Research that follows an intertemporal-oriented strategy advances theory on how, and under which conditions, the shadow of the past and shadow of the future influence the dynamics of IORs. Further, the intertemporal-oriented strategy is uniquely suitable to develop theory on how managers go about in terms of the transition between stages, how the events in one stage influence the IOR in a subsequent stage, and what the tensions and contradictions are that underlie the transition between general stages in IORs.

### **Contingency-Oriented**

The contingency-oriented approach refers to the use of multiple conceptualizations of time to identify contingency effects concerning the dynamics of IORs. The contingency-based strategy is useful to explore the role of time-related variables (or concepts) as a contextual feature in managing IORs (Heimeriks et al. 2015; Jap & Ganesan, 2000; Schildt, Keil, & Maula, 2012). For example, Schildt and colleagues (2012) use longitudinal patent cross-citation data to test hypotheses about the temporal patterns of learning alliances. As an illustration of the insights yielded by a contingency-based strategy, one of their findings is that technological similarity only modestly increases learning in the initial stages of the IOR compared to later alliance stages. In

another study, Heimeriks et al. (2015) analyze different stages of the alliances. Their findings suggest a contingent effect in that the usefulness of knowledge codification varies based on the different stages of an alliance. The contingency-based strategy advances research on the temporal misfit in IORs—defined as the extent to which stages and temporal aspects (e.g., timing)—of activities are aligned among parties (see also Dille & Söderlund, 2011).

The contingency-oriented strategy is instructive in generating knowledge about the conditions under which specific aspects of the dynamics of IORs (e.g., changes in roles and composition) are detrimental or beneficial. However, we observe that the contingency-oriented strategy remains scarcely used, perhaps due to limited data availability. The contingency-oriented strategy is likely to feature more prominently in the literature as management scholars overcome some of the main empirical challenges.

### **SUGGESTIONS TO OVERCOME MAIN EMPIRICAL CHALLENGES**

The four strategies outlined above showcase how the use of multiple conceptualizations of time supports researchers' efforts to advance research on time and temporal aspects in IORs. However, empirical challenges are worth noting about the use multiple conceptualizations of time. Specifically, we identify challenges concerning source-target pairing and data collection. Table 2 presents an overview of each empirical challenge, its relevance to research about IORs, and exemplary studies in overcoming empirical challenges.

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## Source-Target Pairing

An important empirical issue IOR scholars should keep in mind is whether the source—that is, the organization(s) from which information is collected—matches the target—that is, the organization(s) about which information refers to. Source-target pairing is the opposite of collecting data about the entire IOR using information collected from one partner only. Source-target pairing is particularly relevant when dealing with idiosyncratic concepts (e.g., urgency to meet deadlines, importance of past ties and future transactions, severity and relevance of events, and perceptions about counter-party's timing and speed).

The problem of source-target pairing is more or less acute in function of the type of information elicited about the temporal aspects of the IORs. If the data is collected from one partner only, information about relatively well-defined stages (i.e., life cycle time) and age of IORs (i.e., clock time) is less prone to distortion than information about the perceived importance of specific events (i.e., event time) and fuzzy stages of assembling and managing an IOR (i.e., cycle time). The source is more likely to provide inaccurate information about the target when information is difficult to retrieve (e.g., past events) than when information is readily available. This difficulty of retrieval may relate to the lag between the time information is collected and the time to which information refers. The longer the lag, the more likely the respondent will face memory issues and have difficulties to precisely recall details. The difficulty of the source to provide accurate information may also be exacerbated by the salience of events (Homburg, Klarman, Reimann, & Schilke, 2012).

Moreover, the challenge is greater when the source has to retrieve subjective information about time concepts (Mosakowski & Earley, 2000). Data on specific events and conceptualizations of time in IORs encompasses a degree of subjectivity because each party experiences the IOR differently. An exemplar illustration is Mitev and Venters (2009) who develop a “reflexive

retrospective” account about research collaboration agreements between the UK Government and the country’s construction industry. The authors attended multiple meetings between the parties and met individually with representatives of the UK Government and industry firms to understand partners’ priorities. Their use of subjective data unraveled how individuals had different senses of urgency during industry-university collaborations. Although unique access and resource are not always available to researchers, Mitev and Venters (2009) illustrate the large-scale of resources and effort required to study the multiple aspects of time and temporality. Gathering information from multiple parties contributes to advance research on tensions that develop between organizations based on how each organization deals with time-related concepts, such as deadlines and events (Reinecke & Ansari, 2015; Van Berkel et al., 2016).

The source may be reluctant and unwilling to share information about its partner. This problem of intent becomes critical when the source perceives the requested information as sensitive (Lumineau et al., 2015). This is the case, for example, when one party has to report information on the other party’s commitment to the relationship (Perrone, Zaheer, & McEvily, 2003) and future unethical practices (Carter, 2000). IOR scholars are then likely to face confidentiality or social desirability issues (Golden, 1992; Miller, Cardinal & Glick, 1997).

Therefore, while the use of multiple conceptualizations of time does not necessarily require the use of multiple sources of information, collecting data from one source invites caution. A thorough assessment of time and temporal issues in IORs requires the design of data collection strategies able to capture the temporal complexity that characterizes the dynamics of IORs.

### **Data Collection**

IOR scholars interested in using multiple conceptualizations of time should prudently consider the advantages and challenges associated with the dominant methods of data collection in research on IORs. Empirical research on IORs is dominated by the use of surveys (e.g., Poppo,

Zhou & Li, 2016) and secondary data (e.g., Oxley & Wada, 2009), but the study of time and temporal issues also requires granular data that often requires enhanced data collection.

Data on IORs is often elicited using surveys. Surveys present the advantage to be designed around a specific research question or a specific IOR (Table 2). They also are relatively quick to administer, especially online surveys which are convenient to gather information from partner geographically dispersed. Among survey research using a matched sample design, it is possible to distinguish between studies collecting information from different sources, especially to reduce common method bias, from studies collecting information with a match between the different sources and the different targets. Luo (2007) collected data using two distinct surveys. In the first survey, the author targeted the alliance CEOs (general managers) who responded to questions concerning alliance performance, background, trust, their own perceived justice, and the name of the chief manager representing the other party. The second survey was used to calculate the convergent score of justice as perceived by the managers acting as boundary spanners for alliance partners. A similar strategy is applicable to gather data on time and temporal issues from managers working in IORs. The use of multiple surveys is an opportunity to capture party-specific time variable, such as the sense of urgency to achieve specific goals, perceived time pressure, how the shadow of the past and the shadow of the future affect partners' actions, or how manager's allocation of effort varies across stages of IORs.

Scholars may also consider whether secondary data are available to get the desired information (see Schilling, 2009 for a comparison of different sources of alliance databases). The study by Martin, Swaminathan, and Mitchell (1998) about the expansion of Japanese automotive component suppliers into the U.S. and Canada offers an interesting example of the use of secondary data. The authors assembled a dataset of 547 first-tier Japanese automotive component suppliers and 11 Japanese automobile assemblers where suppliers and assemblers work closely

together. The authors draw on key industry sources (e.g., Chilton's Automotive Industries, Ward's Automotive Yearbook and Automotive News) to develop a comprehensive set of variables about both sides of the relationship (e.g., supplier entry and number of employees of the supplier). It is worth noting that while the use of existing databases often leads to focus on tangible information (e.g., firms' size, number of employees, market share), the use of archival data (e.g., activity reports or newspaper articles) may also allow scholars to code perceptual data. For example, Malhotra and Lumineau (2011) use a rich data set comprising more than 150,000 pages of details regarding 102 business disputes arising in vertical exchange relationships. A content analysis of legal files allows them to assess the nature of communications over time between organizations. When able to identify relevant sources of data, IOR scholars may use archival data to get access to precise real time data and thus circumvent some of the issues of retrospective and hindsight biases often associated with survey research.

We see also opportunities to use laboratory experiments. An important advantage of this methodology for time-related research is to establish causality more decisively (Croson et al., 2007). A few IOR studies (e.g., Arend, 2009; Amaldoss & Staelin, 2010) have made an interesting use of experiments. Experiments provide the opportunity to manipulate variables about time and temporal issues (e.g., proximity to deadlines, duration of prior ties, sequence of events in an IOR). For instance, we can conceive a vignette study where the researcher manipulates time pressure (e.g., high *vs.* low time pressure) between two (hypothetical) alliance partners across different stages of the alliance (e.g., start *vs.* completion) (Table 2). However, a recurrent criticism of experimental research is the difficulty to capture fully the market and organizational contexts.

Field experiments, which examine an intervention in the environment, may be particularly useful in addressing questions about the effect of industry events on the dynamics of IORs. Field experiments have the advantage of capturing action embodied in the industry, task, and temporal



contexts (Birkinshaw, Bresman, & Nobel, 2010). However, a challenge is that field experiments are not always available. Many factors of interest to the researchers are seldom object of manipulation in the industry or organizational contexts and researchers face limitations in finding thorough sets of control variables. Virtual reality experiments provide a promising methodology that combines the robustness of experimental research and the opportunity to manipulate (virtual) context variables (for a review, see Innocenti, 2017). A virtual reality experiment enables individuals to immerse themselves in a computer-simulated context controlled by the experimenter. The experimenter can control, for example, the temporal context in which individuals are embedded in the virtual experiment.

More generally, we argue for explicit conceptualizations of time and robust operational definitions of time. Different conceptualizations of time should be more systematically made a key construct of interest to distinguish the specific effects related to time and temporality in IORs.

Enhanced data collection means that scholars fully integrate time issues into their research design decisions: what should be the observation window?, what should be the frequency of observation and what is appropriate time lag between observations?, should observations be made in real time or retrospectively?, or what is the appropriate time unit (month, day, minute, second, etc.)? Qualitative research is particularly helpful to reflect the richness and complexity of IORs and get access to information not available in databases for instance. For example, Faems et al. (2008) conducted interviews with informants of both parties in two repeated alliances in order to unpack the perceptions and actions from the viewpoint of each party. Interviews and ethnographic work are suitable to capture temporal models and the role of structuring devices (e.g., schedules and deadlines) on individuals' management of transitions across IOR stages. For example, Van den Ende and Van Marrewijk (2014) carried out participant-observation of managers' practices of transition in four Dutch construction projects. By doing so, the authors were able to unravel the

role of practices in solving tensions in the transition across project stages (i.e., cyclical time) through the project (i.e., clock time).

Despite its strengths, qualitative research comes with particular challenges. Individuals usually do not like to reflect and disclose information related to negative aspects (e.g., delays by a partner). Scholars conducting interviews to study time and temporal issues in IORs may then be confronted to self-disclosure issues, especially when the information revealed is private, personal, or intimate, or includes painful memories that respondents might hesitate to share. If qualitative research distinguishes itself by its ability to allow researchers to delve deeply into the contextual factors and the complexity of social processes involved in IORs, this methodology tends to be very time consuming. Further, scholars should reassure about the fact that they are “not working for the enemy.” Such reassurance is of essence when studying time and temporal issues in the context of unethical practices in IORs (e.g., partner’s opportunism; see Das, 2004).

As electronic forms of communication become pervasive in IORs, we envisage a wide range of new opportunities to collect data on time and temporal issues. The new sources of data collections range from the Internet of Things, Big Data, the real-time tracking of data with electronic tags or radio-frequency identification. At the same time, developments in other fields of research (e.g., informatics and neuroscience) might yield useful techniques to study time and temporal issues (e.g., data scraping and functional magnetic resonance imaging). A particularly relevant area of application of functional magnetic resonance imaging is the study of the manager’s decision-making process under different levels of time pressure, proximity to project deadlines and milestones, and under different environmental conditions (Gersick, 1988; Perlow, Okhuysen, & Repenning, 2002)

To overcome the empirical challenges of source-target pairing and data collection is essential to advance research that unravels how temporal complexity enhances or hinder value

creation in IORs. The availability of granular data sources presents researchers with the unique opportunity to explore longstanding puzzles in the literature on IORs.

### **FURTHER RESEARCH OPPORTUNITIES**

We extend our discussion on research strategies and empirical challenges by highlighting further opportunities to advance theory on the temporal complexity of IORs. Specifically, we discuss research opportunities to study time-related tensions nested across levels of analysis and temporality as a resource in IORs. Table 3 summarizes the further research opportunities.

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### **Time-based Tensions Nested across Levels of Analysis**

Conflicting dynamics and contradictions are pervasive in IORs. Time-based tensions often range from differences of industry cycle and partner's speed in accomplishing in IORs. For instance, Van Berkel et al. (2016) show that differences between fast-paced (temporary) vs. slower-paced (permanent) organizations disrupt coordination in infrastructure projects, where disruption is amplified by the political context and transitive memory of slower-paced organizations. This study illustrates how time-based tensions develop across levels, from the political context to the group level. We note that the use of multiple conceptualizations of time presents a timely opportunity to support the theorization of the mechanisms nested across levels that underlie the tensions surrounding time and temporal issues in IORs.

Organizational factors influence how individuals deal with time and temporal issues. We call for research that advances theory on the role of explicit time-structures (e.g., schedules and deadlines) and implicit time-structures (e.g., organizational norms about time, and work rhythms)

used in the IOR—and their home organizations—to change how individuals understand time and temporality and subsequently adjust their effort. By the same token, national, legal and cultural context, industry norms, dynamics and rhythms can also lead to time-based tensions between individuals. These tensions are expected to be more salient in the context of IORs that operate in different industries (e.g., cross-sector partnerships) and countries (e.g., international joint ventures).

We envisage opportunities to examine the mutual influence of individual and organizational factors on time and temporality across organizations. Drawing on organizational literature (Gersick, 1988; Standifer & Bluedorn, 2006), we suggest that researchers interested in IORs should examine the individual and group cognition processes concerning time and temporal aspects. The presence or absence of shared mental models influences how groups work together (Standifer & Bluedorn, 2006). It is therefore important to advance theory on how individual's cognition enhances or hinders the extent to which IORs create value (e.g., the development of a new product among different partners). Group members develop specific ways to interpret time that might more or less foster tensions between members of organizations engaged in the IORs.

Further research should also examine the conditions under which time and temporal issues mitigate or exacerbate tensions in IORs. The core question here concerns temporal fit or misfit—the extent to which time and temporal aspects enable or hinder the activity of IORs at a given point in time (Dille & Söderlund, 2011; Van Fenema & Loebbecke, 2014). IORs bring together many individuals with specific mental maps about time. A pertinent research question is to understand under which conditions homogeneity or heterogeneity of mental maps enhances or hinders value creation in IORs. The degree of heterogeneity of individuals' mental maps about time possibly impacts differently on IOR activities under different requirements of knowledge exchange and market dynamics. Furthermore, specific attention should be paid to how boundary spanners—i.e.,

the managers in charge of the inter-organizational relationships (Currall & Judge, 1995; Perrone et al., 2003)—experience temporality. The past, present, and future are idiosyncratic to each individual. The individual’s competences and demographics has a bearing on how temporality changes patterns of action. The individual’s life cycle—e.g., “younger” and “older” or “shorter-tenured” and “longer-tenure” (proxy for experience and expertise)—can influence to which extent managers react to time pressure and competing demands during IORs. These differences can impact on how managers fail or succeed to develop effective transitions across IOR stages.

By taking different conceptualizations of time seriously, further research opportunities concern the development of theory about the time-related tensions on the dynamics of IORs and consequences for individual organizations and the IOR as a whole.

### **Theorization of Temporality as a Strategic Resource**

The decision to enter, maintain or exit an IOR is surrounded by temporal aspects. More specifically, the manager’s actions during the IORs are embedded in temporal aspects inside (e.g., past events in the IOR) and outside of the IOR (e.g., past ties in the market). Because temporal aspects can enhance or hinder collaboration between partners, we suggest that temporality can be understood as a strategic resource in IORs. By temporality as a resource, we mean that parties can strategically use temporal aspects to enable or hinder the collaborative dynamics. The exact implications of temporality as strategic resource varies according to the study’s underlying theory, empirical setting, and objectives. We suggest focusing on temporality when extending and refining existing theory on how IORs create value. If adequately managed, temporality can help managers to increase the extent to which organizations create value in IORs.

Further research should use multiple conceptualizations of time to explore how temporal aspects support dynamics that enable or hinder the success of IORs. If we consider the shadow of the future, the prospect of future business can operate as a social control switch between partners

(e.g., curtailing opportunistic behaviors). At the same time, the maintenance of relationships, specifically in highly complex ventures, is not always met with superior profits (Holloway & Parmigiani, 2016) or high-quality relationships between parties (Azoulay et al., 2010). These examples illustrate the linkage between temporality and benefits that accrue from interorganizational activities.

We suggest that future research should also explore the interconnection between temporality and events. Events are the thrust of the dynamics of IORs and, ultimately, the extent to which IORs succeed (Ariño & de la Torre, 1998; Maoret, Massa, & Jones, 2011). Research on the interconnection between temporality and events is useful to advance the literature on which events are largely detrimental or beneficial to one or more parties of the IOR. These events range from external disturbances to partners' actions and unforeseen disturbances that reportedly occur during IORs. For example, one can study how temporal aspects (i.e., duration, tempo, speed, and timing) of a partner's unethical practices changes the dynamics of collaboration between parties (Oliveira & Lumineau, 2019). A franchisee's deceitful practices (e.g., intentionally misleading the franchisor, and use of backdoor selling techniques) might be ongoing *vs.* sporadic or occur at the start of franchisor-franchisee contract *vs.* several years into the contract. Further studies can examine under which conditions aspects like duration, tempo, speed, and timing of specific events strengthen or weaken IORs.

By advancing research on the temporality as a strategic resource, future research will provide practical insights about managing temporality between organizations. Current research provides limited insight about how managers develop temporal awareness both from the perspective of their partnering organization and the viewpoint of other partners in the IOR. Temporal awareness is likely to influence decisions about resource allocation and setting of

priorities. Further, practical advice on temporality is also relevant to attain integration between partner's activities at different stages of the IOR.

## **CONCLUSION**

We have argued for the use of multiple conceptualizations of time as a way to advance the literature on IORs. We identified four specific strategies: concept-oriented; evolution-oriented; intertemporal-oriented; and contingency-oriented. Further, we also discussed the empirical issues, as well as opportunities concerning data collection and data analysis. We concluded with directions for future research. We hope that this chapter motivates a sustained growth of research on time and temporal issues in IORs. The time is ripe!

## NOTES

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<sup>i</sup> A discussion of the social construction of time falls outside the scope of this chapter. Others already provide instructive conceptual discussions (e.g., Orlikowski & Yates, 2002) and empirical analyses of the social construction of time (e.g., Reinecke & Ansari, 2015; Mosakowski & Earley, 2000).

<sup>ii</sup> In the IOR context, the empirical distinction between cyclical time and life-cycle time is often fuzzy, largely due to the temporal and industry embeddedness of IORs. We therefore use cyclical time to refer to instances that (a) repeat over and over and (b) initiate outside of the IOR (e.g., seasonal demand, and industry cycles). In contrast, and mainly for the sake of clarity, we use life-cycle time to refer to instances that (a) follow a sequence of stages and (b) relate primarily to the inner aspects of the IOR (e.g., stages of product development in a technology alliance, and stages of a social alliance between a multinational firm and a local non-governmental organization). We do acknowledge that IORs follow a general “cyclical” set of stages (Ariño & de la Torre, 1998; Koza & Lewin, 1999; Ring & Van de Ven, 1994). Our conceptual precision intends to facilitate empirical and conceptual distinctions when studying IORs. Such clarity also enhances the comparison of findings across future studies.

<sup>iii</sup> We acknowledge that past research distinguishes between “stage” and “phase”. While the stages are predictable and expected periods, phases refer to analytical periods that are internally consistent but externally distinct in terms of coordination dynamics (see Langley, 1999). In this sense, our notion of *ex ante* stages refers to “stage” and the notion of *ex post* stage refers to “phase.” We opted to use *ex ante* stage and *ex post* stage because this distinction is more intuitive—thus affording more transferability across disciplines and empirical settings.



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**Table 1. Strategies to Theorize Time and Temporal Issues in IORs**

	<b>Definition and Scope</b>	<b>Implementation</b>	<b>Exemplars</b>	<b>Usefulness to Future Research</b>
<b><i>Concept-Oriented</i></b>	It uses multiple conceptualizations of time (i.e., clock time, cyclical time, event time, and the life cycle).	Cyclical time and event time	Ariño and de la Torre (1998), Van Burg et al. (2014)	To examine the interplay between multiple conceptualizations of time. It often results in a refinement of theory.
		Cyclical time and life cycle	Doz (1996), Lipparini et al. (2014)	
		Event time and life cycle	Inkpen and Pien (2006)	
		Clock time and other time concepts	Broschak (2004), Jap and Anderson (2007)	
<b><i>Evolution-Oriented</i></b>	It conceptualizes the nature of the dynamics of IORs; that is, how and why IORs emerge, evolve, and change.	Emerging process	Davis and Eisenhardt (2011), Maurer and Ebers (2006)	To evaluate the impact of socially constructed time for the core areas of operation and strategic decisions in IORs.
		Engineered process	Rosenkopf and Padula (2008)	
		Path dependence	Faems et al. (2008)	
<b><i>Intertemporal-Oriented</i></b>	It focuses on temporal aspects across relatively	Shadow of the past (focus on the past and present)	Holloway and Parmigiani (2016)	To examine the variety of evolution processes and their

	well-defined periods (e.g., pre-contract and post-contract periods).	Shadow of the future (focus on the present and the future)	Lumineau and Oxley (2012)	impact on outcomes for each partners and the IOR as a whole.
<b><i>Contingency-Oriented</i></b>	It draws on time-related aspects to develop contingency-based arguments.	Standard contingency argument	Heimeriks et al. (2015), Schildt et al. (2012)	To study inter-temporal processes and how these can hinder or enable the functioning of IORs.

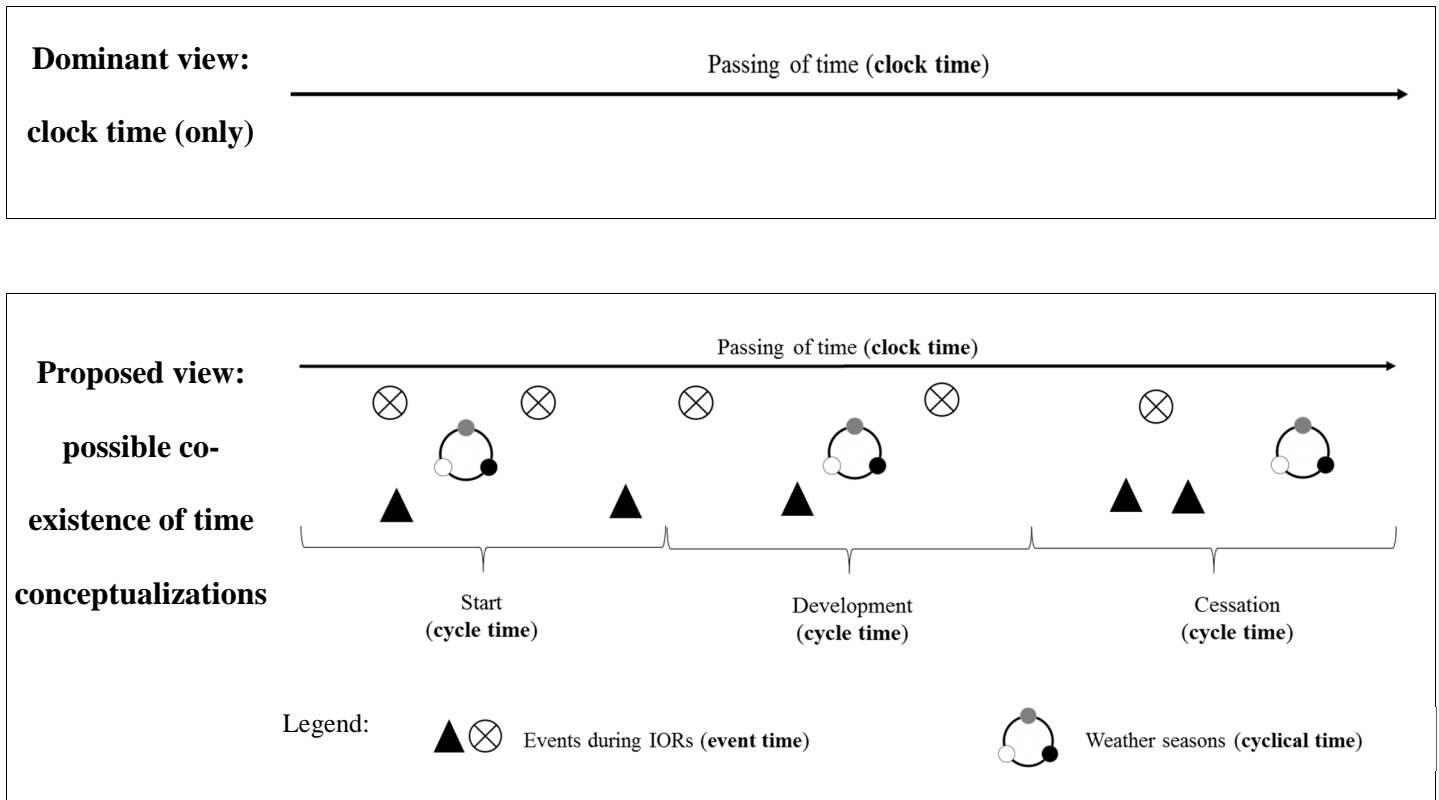
**Table 2. Empirical Challenges**

	<b>Main concern</b>	<b>Why does it matter?</b>	<b>Examples</b>
<b><i>Source-Target Pairing</i></b>	Inconsistent information about time and temporal issues.	Individual’s information retrieval biases. Each party deals differently with time and temporal issues (asymmetry).	Each managers might retrieve, or omit, specific past events; the accounts of each event also differ between parties. Each partner often holds different, and occasionally conflictual, notions of urgency throughout the IOR.
<b><i>Data Collection</i></b>	Dominant data collection methods display few time variables (e.g., industry datasets) or reportedly induce biases (e.g., survey).	Data collection methods enable, or constrain, theory development about time and temporal issues. Like many other concepts, data collection about time and temporal issues is also prone to common method bias.	Experiments—including, lab, field and virtual types—enable the manipulation of time and temporal variables (e.g., deadlines, sequence of events, and speed). Use of functional magnetic resonance imaging to examine how manager’s decision-making varies under different levels of time pressure.

**Table 3. Further Directions for Research**

	<b>Examples</b>	<b>Illustrative Research Questions</b>
<b><i>Time-Related Tensions</i></b>	Deadlines and project milestones are perceived differently at the individual and organizational levels.	Which time conceptualizations best capture the “heart of the action” within and across levels?
	Political events and electoral cycles might be at odds with market entry strategies followed by IORs.	Whose individuals are more likely to develop incongruent time and temporal views in the IOR?
<b><i>Nested across Levels of Analysis</i></b>		What time-based tensions develop across level of IORs?
<b><i>Temporality as a Strategic Resource</i></b>	The transition between project stages is influenced by unforeseen events.	How do temporal aspects enable or hinder the success or failure of IORs?
	Time-related issues (e.g., deadlines and events) are used by organizations as part of their operation strategy.	Why managers fail, or succeed, to develop effective transitions across IOR stages?
	Temporality influences the role of events (e.g., partner’s opportunistic behavior) on the dynamics of IORs.	What temporal aspects impact on the nature and intensity of the consequences of specific events?
		How do manager’s temporal awareness can enhance or hinder integration of partners’ activities?

**Figure 1. An Extended Perspective to Time Conceptualizations in Research on Interorganizational Relationships**



Note: Under “proposed view,” we depict how a typical IOR may experience different events (shown by crossed circles, and triangles), cyclical time (shown by a cyclical chart), and cycle time (denoted by the braces showing different stages of the IOR). The position of the figures used to represent different types of time is random; it serves illustrative purposes only.



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