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Temporal Structuring and Project Behavior

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Temporal Structuring and Project Behavior

Abstract

Project management essentially involves temporal work, in other words, the purposive effort to orient the temporal structures that guide action around given tasks. Yet, projects often involve participants or stakeholders holding different temporal orientations that may be more or less compatible with proposed temporal structures. In this paper we consider how different forms of temporal structuring influence project behavior (i.e., how participants engage with projects, and how projects play out to produce outcomes). Specifically, building on a review of the literature on projects and temporality, we explore how and why the socially constructed nature of project tasks (open-ended vs. closed-ended) interacts with efforts at temporal structuring (open vs. closed) to orient participants' actions, with varying consequences for behaviors and outcomes. We conclude by proposing a series of future research directions aimed at better understanding the relations between temporal structuring and project behavior.

Over 25 years ago, Lundin and Söderholm (1995) outlined the elements of a theory of temporary organization that has become particularly influential in the project management literature. They argued that four concepts – time, task, team and transition – and their inter-relationships were key to theorizing about temporary forms of organizing. They placed "time" at the heart of their framework because of the centrality of temporal boundaries (beginnings, middles and ends) in distinguishing temporary forms of organization from ongoing concerns (see also Bakker, 2010; Burke & Morley, 2016; Whyte & Nussbaum, 2020), and because of the way in which the three remaining elements in their framework are shaped by these temporal boundaries. Thus, "task" refers to the activities to be accomplished within those boundaries and constitutes the raison-d'être of the project. "Team" refers to the people involved in project tasks. The notion of "transition" refers to qualitative differences (between before and after) produced by the temporary organization (Lundin & Söderholm, 1995, p. 439).

Lundin and Söderholm (1995) further elaborated on the time dimension of temporary organizations by considering sequential activities that accompany progression from the beginning to the middle and the end of a project. According to the authors, these involve entrepreneurialism to get projects started (beginning); decoupling, task partitioning, planning and guarding to manage their execution (middle); and finally recoupling, institutionalization and bridging to complete the transition to more permanent structures (end).

The centrality of time to project organizing is also clearly evident in the prescriptive literature on project management, represented by the classic planning tools such critical path methods, Gantt charting and stage-gate processes, as well as in more contemporary practices such as Agile and Scrum, and variations thereof (Gemino, Reich, & Serrador, 2021; Project Management Institute, 2017). While traditional project management tools adopt a predictive

approach characterized by schedules and deadlines, more recent formal methodologies allow increased flexibility in adjusting tasks to unforeseen developments, but nevertheless prescribe rhythmic work patterns involving repetitive cycles of coordinated effort and feedback.

In other words, project management necessarily embeds some form of "temporal work" defined, following Bansal, Reinecke, Suddaby and Langley (2022) as any individual, collective or organizational effort to influence, reinforce, or redirect the temporal assumptions or structures that shape action. In practical terms, formal temporal structures may include schedules, event-based targets, time horizons, and prescribed rhythms. Less explicit temporal assumptions that may nevertheless orient organizational action could include, for example, taken-for-granted norms and practices embedded in particular organizational and cultural settings (e.g., norms concerning the degree of tardiness expected and allowed) (Orlikowski & Yates, 2002; Vaagaasar, Hernes, & Dille, 2020).

Yet despite the recognized importance of time and temporality in project work, Burke and Morley (2016) suggest that there is a need for greater attention to temporal structuring and its role in orienting behavior in temporary organizations. Recent work in both the specialized project management literature (e.g., Kalff, 2022; Nachbagauer, 2022; Vaagaasar et al., 2020; Whyte & Nussbaum, 2020) and in the wider organization studies and management literature (e.g., Bakker, Boroş, Kenis, & Oerlemans, 2013; Blagoev & Schreyogg, 2019; Kremser & Blagoev, 2021; Lifshitz-Assaf, Lebovitz, & Zalmanson, 2021; McGivern et al., 2018) has begun to move in this direction. However, we have not seen concerted attempts to synthesize the cumulative learning from these studies. The purpose of the current chapter is therefore to address these shortcomings in the existing literature on time and temporality in projects. Specifically, we ask: *How do the temporal structures and assumptions associated with project tasks influence project behaviors?*

By project behaviors, we refer here to the ways in which participants engage with projects, and how they then play out to produce outcomes, a definition that is close to, though not identical with, that suggested by Ika, Love and Pinto (2020).

Indeed, we know that a wide variety of options for temporal structuring may exist depending on the nature of the project and the temporal work of participants and stakeholders. For example, while some projects (e.g., putting on the Olympic games) may have apparently immutable deadlines that everyone will work to respect (Pitsis, Clegg, Marosszeky, & Rura-Polley, 2003), other projects (e.g., eradicating an infectious disease; developing radical innovation), though influenced by time pressure, may lack fixed clock-time targets or repeatedly violate them because of inherent uncertainties. Their endpoints are desired states that are temporally open-ended, and that can only be fully apprehended as they are approached. Gustavsson and Hallin (2015) label such projects as "goal-seeking" rather than "goal-oriented". In addition, some projects may have short and well-defined time horizons (the writing of this chapter), while others – notably large mega-projects – may have extended lifecycles that extend well beyond many so-called permanent organizations (Brookes, Sage, Dainty, Locatelli, & Whyte, 2017).

As we see from these examples, issues of temporality are clearly dependent on and intertwined with the nature of the project task. Moreover, there can also be many uncertainties associated with both dimensions. The nature of the task may be influenced by the temporal structures that frame it, and the temporal structures developed may be influenced by the nature of the task. In addition, it is important to consider the "team" (or "who") dimension as well: consensus, conflict and politics may also influence the temporal and task dimensions and their consequences for project behavior, enhancing ambiguities.

We organize our review in this chapter around three main headings. First, we review studies that examine project behaviors in contexts of "temporal closure" where overarching temporal structures are tightly constraining and immutable. Second, we examine project behaviors in situations of "temporal ambiguity," where the task defines the desired endpoint, or where other factors such as environmental uncertainty or political influence loosen the link between task and time and potentially enact tensions and accommodation between the two. The working hypothesis driving the organization of the chapter is that the degree of temporal closure or temporal ambiguity can make a difference to project behaviors. In the third section of the chapter, we draw on the findings in the prior sections to suggest an agenda for future research.

Temporal Closure: Fitting Task to Time

Project management from a traditional perspective involves the creation of artifacts in the form of timelines that indicate which tasks will be carried out by whom and when. As Yakura (2002) shows, building on Hassard (1991), timelines as "boundary objects" generally serve three functions inherent to project management: scheduling (i.e., indicating when the overall task or subtasks will be completed), synchronizing (i.e., coordinating the work of interdependent people), and allocating (i.e., managing resources – notably human resources – allocated to tasks). A timeline is a future oriented "narrative" that, by projecting who will do what when orients action – in other words, it is performative, channeling actors into certain roles and activities, and creating accountabilities that influence behavior in ways that help to enact the timeline (Deuten & Rip, 2000; Yakura, 2002).

As Yakura (2002) also shows, and as Kalff (2022) points out, project managers are both custodians of timelines, sustaining their role in disciplining project activities, but also nevertheless engage in revising them continually and on the fly to deal with inevitable and unexpected task

contingencies. According to Kalff (2022), this is the essence of project management. It explains, in part, how and why projects appear to be "organized" and do not for the most part descend into complete chaos, while almost never playing out as planned, and often violating projected deadlines. We will revisit situations of temporal ambiguity in more detail later.

However, in some cases, temporal structures are less malleable, and deadlines appear to be fixed and immutable – a situation we refer to as "temporal closure" (e.g., see the examples given above). How then do people deal with these situations, notably when task uncertainties persist? A first interesting and basic contribution to this question comes from Gersick's (1988) study of eight naturally occurring task groups, subsequently replicated in a laboratory experiment (Gersick, 1989). It is important to note that the naturally occurring groups Gersick (1988) studied were clearly engaged in "projects" oriented around designing something new, but they were not officially guided by formal project management techniques and their timelines were quite short (from 7 days to 6 months). The groups did however have clear deadlines that in most cases were not flexible.

Moreover, it is evident from Gersick's (1988, 1989) findings that these deadlines were very important in orienting the task behaviors of participants. Specifically, the author found that the groups started their lives by committing to a particular approach to the task, but precisely in the middle of their allocated timespan, they engaged in a "mid-point transition", taking stock of where they had been, and reorienting their task approach (often quite radically) in order to successfully meet their deadline. Subsequent studies (Okhuysen & Waller, 2002; Waller, Zellmer-Bruhn, & Giambatista, 2002) have confirmed the presence of midpoint transitions in many, though not all cases of groupwork, suggesting that their presence may be contingent on certain other conditions surrounding the group (e.g., familiarity among members).

Nevertheless, all these studies tend to support the intuition that deadlines tend to concentrate the mind, and that time markers such as a midpoint may make them more salient, and provide an important opportunity to shift gears when this is needed to deliver the task. The power of temporal structuring through the use of deadlines and other temporal markers has been underlined in other studies. For example, Lindkvist, Söderlund and Tell (1998) revealed how tight deadlines for new product delivery at Ericsson stimulated the firm to develop a novel mode of temporal structuring (the 'fountains model') in which key activities were scheduled in parallel rather than sequentially. This project management innovation subsequently spread and has contributed to speeding up product development.

In a study of large scale transformation efforts, Söderlund (2010) confirms the power of deadlines and milestones in stimulating participants to engage in knowledge integration at key moments in order to deliver results. Similarly, Söderlund and Pemsel (2022) investigated the introduction of digital design methods to a construction firm, and revealed how a form of temporal structuring based on deadlines and a rigid "no design time" window created greater temporal consciousness among participants, enabling them to organize future work as a function of past progress, current needs and upcoming temporal milestones. Yet, the study also revealed how the success of this initiative also required the creation of new managerial roles dedicated to ensuring coordination and conformity to novel temporal structures.

Temporal closure enacted in deadlines and milestones clearly orient project behavior, often in positive ways, as shown by many of these studies. And yet, various contingencies may make them difficult to meet, suggesting a need for flexibility. Vaagasar (2020) point out that as deadlines approach, temporal shifts in the organization of activities become increasingly difficult to make.

This suggests a need for continued attention to situated temporal orientations among participants as a project evolves, rather than a rigid focus on implementing preconceived plans.

Along these lines, one might ask what happens when projects are complex and timespans become extended, albeit still with essentially immutable deadlines. The planning of regularly scheduled events such as international exhibitions, academic conferences or the Olympic games fall into this category. The evidence tends to suggest that the management of large and complex mega-events with fixed deadlines can often be highly problematic, with a tendency towards large cost overruns (Flyvbjerg, Budzier, & Lunn, 2021; Müller, 2015). For example, for the Olympic games, Flyvbjerg et al. (2021) note that uncertainties caused by long lead-times, combined with the inexorability of deadlines, and the limited possibility of adjusting the quality of deliverables (task inflexibility) create severe cost pressures leading to an average cost overrun of 172%. Within such long timelines, unexpected contingencies are likely to derail tightly formulated plans and may well require budgetary adjustments.

Moreover, as deadlines approach, contractors are able to exploit their power position to obtain large premiums to finish on time (Müller, 2015). These effects are enhanced by the irreversibility of many such commitments (Flyvbjerg et al., 2021). Indeed, Ross and Staw (1986) refer to Vancouver's organization of Expo 86 as a *"prototype of escalation"* reflecting the way in which politicians and civil servants became increasingly locked in to holding the exhibition no matter what: social, psychological and institutional factors made it impossible to back out, despite exploding costs. This is the case for many event-based projects.

In the face of such complexity and uncertainty, classic approaches to project management based on detailed preconceived plans and timelines may appear inadequate, and almost bound to be disrupted as soon as they are formulated. Yet, how else might projects be organized to deliver

on time? In a study of an infrastructure project associated with the Sydney Olympic games, Pitsis et al. (2003, p. 575) developed the notion of *"future-perfect thinking"* to describe how project managers built not so much on detailed pre-planned specifications, but on a visualization of how they wanted the future endpoint to be (*"a projection of ends"*), and then worked with project partners in a collaborative process to determine in an ongoing way what exactly would have to be accomplished to achieve those ends, perceived *"as an emergent rather than explicitly scripted strategy."* This was guided by an ambitious endpoint that implied not only the respect of cost and scheduling targets but also goals related to safety, community, and environment.

Relatedly, in a study of the 2012 London Olympics, which were perceived as a success both in terms of delivery on time as well as within budget, Davies and Mackenzie (2014) revealed a mode of governance – referred to as a meta-system of integration – that enabled this complexity to be managed. Grabher and Thiel (2014) built on these findings and on their own research on the London Olympics to argue that a form of organizing based on "heterarchy" (multiple, tangled and shifting hierarchies) rather than a pure "hierarchy" is more likely to enable the required degree of adaptability over time. Heterarchy is described as a form of organization that involves three features: ambiguity, redundancy and loose coupling.

Ambiguity implies structuring organizational units involved in the project to ensure a balance between diverse goals (e.g., preparing for a successful event vs. contributing to future economic development). Redundancy has cognitive (e.g., openness to considering alternative options), organizational (e.g., scheduling buffers and contingency funds) and relational (informal trust-based relations allowing smooth adaptation) dimensions according to Grabher and Thiel (2014), which combined provide the slack needed to accommodate the unexpected. Loose coupling implies decomposing complex projects into components that may be managed relatively

autonomously, with their own specific sets of plans and timelines that are nevertheless connected to the whole (Davies & Mackenzie, 2014).

Subproject autonomy may also allow the creative reformulation of certain task components as deadlines approach (Alioua & Simon, 2017), without undermining the whole. The heterarchical form of organization described by these authors, while enabling creativity and autonomy in the development of specific project components is nevertheless oriented by higher level targets, and milestones, accompanied by both scheduled and ad hoc forums for problem-solving, and supported by a collaborative culture among different partners.

Overall, temporal structuring to meet deadlines clearly becomes more challenging and multi-faceted as projects expand and diversify. Moreover, while larger and more complex projects clearly demand greater attention to formal temporal structuring involving temporal artefacts such as plans and timelines, the research suggests that these devices need to embed flexibility, modularity and open-endedness to allow for adaptation and creative problem-solving, drawing on future-perfect thinking and heterarchical organizational forms.

A final question that might arise is what happens when formal temporal structuring devices are applied to creative projects that involve very short timelines. Interestingly, Lifshitz-Assaf et al. (2021) studied precisely this in the context of short 72-hour hackathons aimed at developing assistive technology solutions for disabled people. Comparing 13 separate hackathon teams, the authors found that those teams who attempted to import standard temporal structuring devices from their regular workplaces (e.g., involving upfront product design, planning, and "full coordination") were unable to generate viable working products because they found themselves channeled into a failing trajectory, and unable to reorient in the face of setbacks. In contrast, those teams that engaged in minimal coordination involving only a high-level product design without

clear focus on methods or materials were slightly more successful. However, it was only those teams who began with minimal coordination involving free experimentation around ideas, but then gradually developed their own temporal structures allowing adaptive coordination (e.g., by exchanging work and nudging each other forward) that were able to generate fully functioning products within the time constraint. This leads the authors to argue for the value of emergent temporal structuring for innovative projects.

Combined with the very different studies previously described, it appears that the adaptation of tasks to temporal constraints (whether long or short) is permeated by an ongoing tension between planning and emergence, where effective temporal coordination may require both in different doses depending on the setting and the repetitiveness or innovativeness of the task (Kalff, 2022; Lundin & Söderholm, 1995). It is not clear however that scholars have yet fully captured the implications of this tradeoff. Moreover, as we discuss next, some projects are naturally more temporally ambiguous and open-ended, begging the question of how temporal structuring might be organized in such circumstances.

Temporal Ambiguity: Negotiating Time and Task when Projects are Open-Ended.

While some project tasks and timeframes are predefined, they may be more open-ended in other projects, and need to be mutually negotiated over time, a situation we qualify as "temporal ambiguity." Various factors might contribute to temporal ambiguity: some are related to the inherent uncertainty about future events (Beckert, 2016), or about the nature of the task to be accomplished (Nachbagauer, 2022). Other projects may involve imagining desirable futures (Alimadadi, Davies, & Tell, 2022), working back from this imagined future to establish what activities might be required and by when, without necessarily being able to clearly pin down precise timelines.

In addition, unpredictable events also often affect projects and disrupt plans (Nachbagauer, 2022). This is typical for entrepreneurial ventures. For example, as Berends et al. (2021) show, unforeseen events may lead entrepreneurs to reconsider their temporal commitments by deferring or reformulating their projects, or may even lead them to pivot towards a new project entirely (Berends et al., 2021). Indeed, where deciding how to respond to unexpected events takes a long time, 'dwindling time' reduces the chance of getting projects back on track (Vaagaasar et al., 2020).

Moreover, as imagined futures draw closer, people may change how they perceive tasks and timelines, becoming preoccupied with practical everyday concerns rather than ideal imagined futures (Trope & Liberman, 2003). A sense of urgency may lead to increasing closure in temporal structuring (Orlikowski & Yates, 2002) or a concern to prevent potentially undesirable futures from emerging (Alimadadi et al., 2022). Thus, plans that seemed desirable in the far future may even come to be seen as mistakes (Augustine, Soderstrom, Milner, & Weber, 2019; Trope & Liberman, 2003; Whyte & Nussbaum, 2020).

A particular form of temporal ambiguity may occur for what Gustavsson and Hallin (2015), refer to "goal seeking" projects where it is principally the achievement of some goal or broad ambition, rather than the precise timeline that constitutes the project. Examples might include John F. Kennedy and NASA's ambition to put a man on the moon, or the World Health Organization's projects to eradicate diseases such as smallpox and polio. In these cases, it is (in principle at least) the achievement of the goal that determines the end of the project, not a fixed date or timeframe.

Brookes et al. (2017) point out that some large mega-projects may actually be more open-ended and enduring than the surrounding organizations that they are related to, inverting the generally assumed relationship between the two. For example, they show how a project to develop

a large windfarm evolved in the face of bankruptcies of the organizations that were involved in developing it, shifting partner roles, and the fuzzy boundaries between development, construction and operations. In the end, the "project" was projected to continue for an imprecise period of 25-50 years that would include the delivery, operation, refurbishment and eventual decommissioning of the wind farm. In these circumstances, the distinctiveness of project organization as compared with permanent organization (especially when many permanent organizations embed multiple projects) becomes fluid.

When projects are temporally open-ended, this begs the question of when and how they might ultimately come to be terminated. Whyte and Nussbaum (2020) focus on the temporal boundaries between mega-project completion and the operations that derive from them, and point out the need for a variety of mechanisms that are themselves fuzzy and overlapping in time. For example, they point out the role of specific artefacts and boundary objects, as well as distinctive temporally organized procedures for handover. They also refer to the notions of "soft landing" and testing implying progressively timed partial rather than immediate and full operation of delivered infrastructure accompanied by testing and adjustment over a long timeframe. The transition itself thus requires its own forms of temporal structuring: almost a "project" in itself.

Engwall and Westling (2004) discuss the notion of 'peripety' during R&D projects; a moment of sudden change in which a concrete shared conceptualization of a project mission emerges, enabling participants to move on from discussing ambiguous problems and goals to actively addressing them. Rather than happening at prescribed milestones, or project midpoints as Gersick (1988) suggests, Engwall and Westling (2004) find that peripety emerges when project participants have developed a common theoretical understanding of their mission, concrete experience of a potential solution, and have spent enough time together for the project to reach

'maturity'. This suggests that innovative breakthroughs tend to happen at the right 'kairotic moment' (Garud, Gehman, Kumaraswamy, & Tuertscher, 2016) in a project, so projects need an open-ended timeline to achieve their aims.

Yet project timeline open-endedness can also lead to what might be called "creeping permanence" in the sense that some projects come to continually renewed and routinized even though they may not be delivering results. There may also be ambiguity surrounding whether a "goal-seeking" task (such as eliminating a disease) has been accomplished or not, raising questions about whether and how the "project" should be disbanded. R&D projects that are slow to generate their expected breakthroughs may also run into this problem. In a study of such projects, Royer (2003) argues in fact that, just as the launching of new ideas may require dynamic and motivated project champions, their disbanding may require "stopping champions" who work in a similar manner to force the closure of projects that have taken on a life of their own.

Another kind of temporary organization that has an ambiguous open-ended character, despite the presence of temporal urgency (focused not on closed deadlines, but on event-based danger and risk) concerns disaster or crisis response. For example, Geiger, Danner-Schröder, and Kremser (2021) found firefighters using 'temporal autonomy' to improvise and 'perform temporal boundaries' (Bucher & Langley, 2016); uncoupling and recoupling temporal routines in response to temporal cues to realign collectively held temporal expectations and appropriately respond to evolving, potentially chaotic circumstances.

This echoes the work on megaprojects mentioned above where modularization of large projects enables subproject teams to adjust and draw upon the appropriate temporal structures to achieve tasks in ambiguous circumstances. Nachbagauer (2022) describes the importance of temporal work relating to timing in projects, highlighting the need at different times to stop

dysfunctional momentum, interrupt, observe and reflect, wait or quickly seize opportunities even under conditions of extreme urgency. Temporal structuring here is not just about scheduling and synchronizing, but also about managing speed and rhythm.

Beyond the contextual uncertainties and ambiguities described so far, most importantly, projects tasks and timelines may also be ambiguous due to the involvement of heterogenous stakeholders with different interests and temporal preferences who come together to pursue a common project for a limited period (Bakker, 2010; Dille, Hernes, & Vaagaasar, 2022; Dille, Söderlund, & Clegg, 2018; Stjerne, Söderlund, & Minbaeva, 2019). Aligning different interests and temporal preferences within the same project creates additional complexities in project behavior that may not always be fully recognized in advance.

For example, there may be temporal tensions between project and permanent organizations (Geraldi, Stjerne, & Oehmen, 2020; Stjerne & Svejenova, 2016). Circumstances or how projects are viewed evolve, so stakeholders may wish to change the nature of their participation or no longer be involved in projects, which may result in the reopening of projects aims and timelines (Bakker, 2016; Brookes et al., 2017). Drawing upon the example of a project to enhance a city's nightlife area, Hilbolling, Deken, Berends, and Tuertscher (2022) also explain how collaborators' differing expectations of the project and of when its objectives would be achieved can change over time, creating reemerging temporal complexity that hampers project coordination.

Kaplan and Orlikowski (2013) argue that projects require temporal work, to negotiate and agree 'temporal settlements' about project aims and timelines, to productively move forward implementation. However, they also note that settlements among stakeholders are provisional and temporary, because contexts change, aims and timelines reopen to reinterpretation or break down, so ongoing temporal work is necessary for projects to make progress.

Along these lines, McGivern et al. (2018) showed how consultants, hired to assist a health care system in designing an efficiency savings program, mobilized an externally fixed deadline and imposed a rigid PowerPoint-based planning framework (conceptualized as a boundary object) on health care clinicians and managers. Clinicians and managers, for their part, engaged in passive resistance by going through the motions of filling out the framework without any intention to follow through on implementation. Here, the consultants' temporal orientation towards *"blitzing and leaving"* to optimize their profits conflicted fundamentally with managers and clinicians' orientation towards *"taking the time to develop sustainable change".* This resulted in a superficial temporal settlement that enabled the parties to meet the deadline, but that ultimately unraveled after the consultants left (McGivern et al., 2018, pp. 1014-1015).

Indeed divergent interests and interdependencies among different project participants may be influenced by the 'shadow of the future' (Ligthart, Oerlemans, & Noorderhaven, 2016; Poppo, Zhou, & Ryu, 2008; Swärd, 2016), particularly whether projects are seen as one off or to be repeated (Bakker, DeFillippi, Schwab, & Sydow, 2016). For example, studies have suggested that the shadow of the future may serve to promote the maintenance of trust and diffuse reciprocity among stakeholders in a project early in its life. However, this effect may become less influential as the project is coming to an end and is seen as one-off, when relations become more transactional and opportunistic (Das, 2006; McGivern et al., 2018; Poppo et al., 2008).

Projects may also be underpinned by 'swift trust', based on "familiarity, shared experience, reciprocal disclosure, threats and deterrents, fulfilled promises, and demonstrations of non-exploitation of vulnerability" (Meyerson, Weick, & Kramer, 1996, p. 167). Including temporal aspects linked to past, present and future. Bechky (2006) shows how role expectations, and interorganizational career progression structures underpinned trust coordination in temporary film

projects. In simple terms, people working on temporary projects knew the roles they were expected to enact during film projects and enacted them well, because they knew that this would increase their chance of being invited to work on future projects, and hence build careers in the film industry (see also Huemann, Keegan, & Turner, 2007).

Finally, studies have also suggested that forms of temporal coordination among project participants may be significantly affected by power dependencies among them. Thus, in their study of a consulting firm managing a complex construction project, Kremser and Blagoev (2021) show how internal deadlines and schedules were continually disrupted by temporal conflicts. Here, routines could not be carried out at scheduled times because of delays occasioned by higher status actors who prioritized other tasks. The result was that lower status individuals found themselves adapting the timing of their activities to those of higher status actors. This form of temporal structuring enabled external deadlines to be met, but at the cost of long working hours and the invasion of private time. This reminds us that temporal work in project contexts overflows the workplace, with potentially unhealthy effects on certain people, notably those who are pressured into aligning their own temporal needs to the rhythms and demands of more powerful others (Ancona & Chong, 1996; Blagoev & Schreyogg, 2019).

Temporal Structuring and Project Behavior: Discussion and Future Agenda

Given the importance of deadlines and temporal closure in the very definition of what project management means, we began by reviewing the literature specifically focusing on deadline-based project behavior. We found that the importance of deadlines in orienting group attention and task activity at certain particular moments is clear (Gersick, 1988), and that the use of various temporal boundary objects and timelines to manage temporal constraints is deeply institutionalized (Kalff, 2022; Yakura, 2002). Yet, we also found that the literature dealing both

with more complex mega-projects (Davies & Mackenzie, 2014; Grabher & Thiel, 2014) and with short-term initiatives (Lifshitz-Assaf et al., 2021) has emphasized the important role of temporal autonomy, flexibility, relational trust and open-endedness, along with more formal temporal structuring devices for ensuring success.

In the second part of our review, we considered what happens when tight temporal constraints are relaxed, drawing attention to sources of temporal ambiguity, including uncertainties about when goals might be achievable (Gustavsson & Hallin, 2015), fuzziness around the boundaries and transitions between temporary and permanent organization (Brookes et al., 2017; Whyte & Nussbaum, 2020), event-based contingencies (Nachbagauer, 2022) and political dynamics (Kremser & Blagoev, 2021; McGivern et al., 2018). As we saw, these conditions augment the diversity of temporal structuring devices considered, and illustrate forms of project behavior deviating from projects' formally espoused goals.

We note also that as project management research has become more sophisticated, there is increasing recognition of the need to view projects from a processual perspective that takes into account time and temporality, rather than from a more static variance-oriented perspective that has dominated the project management field in the past (Brookes et al., 2017; Brunet, Fachin, & Langley, 2021; Dille et al., 2022; Söderlund, 2013; Stjerne et al., 2019; Tryggestad, Justesen, & Mouritsen, 2013; Vaagaasar et al., 2020). The attention to time and temporality has thus clearly increased in recent years and this is manifest in the rich insights we report on in this chapter. Yet several areas for development remain.

Notably, throughout our review, several different temporal structuring tensions and tradeoffs emerged as crucial to affecting project behavior. These include inter-related tensions between temporary and permanent organizations (Burke & Morley, 2016), detailed planning and

adaptive emergence (Lifshitz-Assaf et al., 2021), past-oriented rigidity and future-oriented flexibility (Pitsis et al., 2003), autonomy and coordination (Geiger et al., 2021; Grabher & Thiel, 2014), acceleration to achieve quick results and slowing down to regroup and reorient (Nachbagauer, 2022), and time-based, sequence-based and role-based forms of timing and synchronization (Kremser & Blagoev, 2021).

A first and obvious direction for future research would involve investigating further the temporal tensions and tradeoffs within projects, and their effects on outcomes. Given the emphasis of much of the literature on the intertwined nature of the poles of these tensions, one could imagine both a contingency approach to considering them (i.e., identifying the conditions where different orientations would be desirable) or, perhaps more fruitfully, a paradox approach (Burke & Morley, 2016; Delisle, 2019; Geraldi et al., 2020; Smith & Lewis, 2011) that recognizes the value of both poles under most conditions.

A second important direction for research involves deepening analysis of the role of political dynamics in temporal structuring and project behavior. The papers reviewed here reveal how varying temporal assumptions among stakeholders (Dille et al., 2018; McGivern et al., 2018), power dependencies (Kremser & Blagoev, 2021), and trust relations (Bechky, 2006; Swärd, 2016) can orient the way in which tasks are negotiated and synchronized over time, with effects on individual lives, and on mandated and unanticipated project outcomes (Burke & Morley, 2016). We also know that temporal boundary objects may have different meanings for different people (Bechky, 2003; McGivern et al., 2018; Yakura, 2002). There is room for further study of temporal negotiation and boundary-drawing among stakeholders in the context of projects.

A third area of study is to consider how the kinds of temporal structuring phenomena we described for individual projects influences broader organizational behavior in the context of

ongoing trends towards "projectification" (Kremser & Blagoev, 2021), i.e., efforts to increase the use of project organizing within non-temporary organizational settings in order to instigate desired change, or to implement novel practices. Reflecting on temporality during participation in a project may enable reconceptualization of past, present and future, facilitate wider organizational change (Soderlund & Pemsel, 2022) or refocusing on project activities (Lindkvist et al., 1998).

However, the political and interpersonal issues related to temporal structuring we noted above are likely to be intensified when individuals find that their time needs to be sliced across different projects that have different temporal demands. To the extent that people respond to the scheduling issues this creates for them by prioritizing the tasks that are of importance to higher status others as Kremser and Blagoev (2021) infer, the particular mix of projects people are involved in as well as the power dependencies they imply could have important consequences for the way in which organizations are managed and their capacity to successfully implement organizational change. Certain authors have begun to examine how change projects interfere with each other (Falkenberg, Stensaker, Meyer, & Haueng, 2005; Kanitz, Huy, Backmann, & Hoegl, 2022), but have not done so using a temporality lens.

Fourth, and building on this, there has been little research that has considered the intersection of projects and of peoples' lives and careers. We have already mentioned how some forms of temporal structuring may create work-life balance problems for individuals, an endemic phenomenon, notably in professional service domains such as consulting (Blagoev & Schreyogg, 2019). Bechky (2006) describes how interorganizational career pathways, premised upon meeting role expectations during projects, ensure trust and coordination during one-off film projects.

Yet taking a longer term perspective, some project managers may choose to pursue tasks and timelines that reflect their own career trajectories, for example, aiming to produce quick wins

to earn promotions to bigger and better projects, which might may not benefit the project's or the organization's longer term success or sustainability (Tavory & Elisasoph, 2013). Kunisch, Bartunek, Mueller and Huy (2017) argue that individuals' professional life cycles may influence the degree to which they may be willing to engage in change projects, and the approaches they may take to them. Lives and projects intersect and there would be value in paying more attention to the consequences of this both for project behavior and human development.

Fifth, as Brunet, Fachin and Langley (2021) indicate, researchers who study projects may consider time and temporality from a variety of different perspectives depending on their onto-epistemological assumptions. Most of the research we have described here views time from a more objectivist perspective, although recognizing the potential for human agency to orient temporal structures. However, project management scholars drawing on a narrative perspective (Deuten & Rip, 2000; Pitsis et al., 2003; Sergeeva & Winch, 2021) have drawn attention to more subjectivist notions of time, and the way temporality is both represented in participants' accounts of the past, and drawn on to shape the future.

Moreover, Shipp and Jansen (2021) suggest that individuals' subjective notions of time – i.e., sensemaking about past, present and future expressed in narratives – itself evolves over objective time, with potentially important consequences. There is thus room to build further on a subjective time perspective to better understand how and why project participants' individual and collective narrative sensemaking evolves and contributes (perhaps along with material artifacts) to orienting behavior throughout the duration of projects.

Finally, projects are likely to play a role in attempts to develop sustainable future organizations and society. Yet the temporary nature of projects is logically incompatible with the long-term focus of sustainable development, so there is need to better understand how to focus on

longer-term project deliverables, whilst working on shorter-term projects (Brookes et al., 2017; Huemann & Silvius, 2017).

Moreover, in the face of major societal and ecological upheaval involving 'grand challenges' (Ika & Munro, 2022), such as global warming, wars, corruption (Lehtinen, Locatelli, Sainati, Artto, & Evans, 2022), pandemics, rising health and social care demands, there is an increasing chance that large infrastructure projects may be difficult to insulate from turbulent contexts. Projects risk being overwhelmed by the unexpected (e.g., the "2020" Tokyo Olympics – postponed because of the Covid 19 pandemic, and ultimately held in 2021). Corrupt politicians and officials may commission project where costs, benefits and time forecasts are deliberately and systematically over optimistic, expecting bribes and/or political support but leading to poor return and overruns (Lehtinen et al., 2022; Locatelli, Mariani, Sainati, & Greco, 2017). Corruption may also undermine alternative projects that would have better addressed grand challenges.

It is therefore possible in some cases that complex projects focused on grand challenges may be overtaken by the very problems that they are intended to address. Understanding how to intervene in such areas through project organizing and yet maintain the ability to "manage" through some kind of temporal structuring over the longer-term seems likely to stretch project management capabilities. Tracking and explaining such processes into the future may therefore be an important research enterprise.

The key practical implication for project managers is that, when conceiving, initiating and running projects, they should be critically mindful of predictable and unanticipated ways in which time and temporality, and their inter-relationship with project tasks, affect project behavior.

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