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THE ROLE OF SPACE AND TIME IN BALANCING CONFLICTING PRESSURES THROUGH ROUTINE DYNAMICS

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ABSTRACT

We examine how spaces and the temporal context shape routine actions that balance conflicting pressures for efficiency and flexibility. From our findings, we develop a conceptual model of how these pressures are balanced through the co-constitution of space and time and processes for coalescing, reconstituting, standardizing, and reorganizing.

INTRODUCTION

How routine actors balance conflicting pressures for efficiency and flexibility is of central importance to routine scholars (Adler et al. 1999; Spee et al. 2016; Turner and Fern 2012). Pressures for efficiency manifest through resource constraints and demands for standardization of actions to increase organizational efficiency (March and Simon 1958). Pressures for flexibility manifest through demands for innovation and flexible, non-standardized actions to deliver novelty (March 1991). While scholars have presented structural, cognitive and agentic solutions for eliminating and balancing these pressures (Salvato and Rerup 2018; Smith and Besharov 2017) they have devoted less attention to understanding how time is implicated in balancing such pressures (Turner and Rindova 2017). Routine dynamics are an appropriate lens for examining this question because the flow of actions reproduces time (Orlikowski & Yates, 2002) and routines are a locus not only for accomplishing work, but also for flexibly working out conflicting organizational pressures (D'Adderio 2014; Pentland and Feldman 2005). Thus, to deepen our understaning of how time might be implicated in balancing these pressures, we examine routine dynamics in the context of videogame development (Cohendet and Simon 2016). Specifically, we focus on the temporal patterning of scrum meetings as a space that is mutually constituted with time to address the question: How does the relationship between spaces, time, and routine actions balance pressures for efficiency and flexibility?

We addressed this question through an ethnography of an independent video game development studio, DevStudio (a pseudonym). Developers at DevStudio worked in project teams which granted them agency over routine performances and, more importantly, the timing of actions in "scrum" meetings. Scrum is a framework for project management that emphasizes the accomplishment of project goals through iterative "sprints" (Sutherland & Sutherland, 2014) which, in this case, lasted three weeks. For each sprint in the scrum process, the leads on a project meet to develop a task schedule called a "scrum sheet." The project leads identified which goals to include from a wish list, called a "backlog." The rest of the team provided input on the tasks required to execute the backlog. During the sprint, participants used daily "scrum

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meetings" to evaluate how work was progressing, and whether adjustments were warranted. At the end of each sprint, the team evaluated its progress and choose another set of goals from the backlog to work on for the next sprint (Moe et al. 2010; Sutherland and Sutherland 2014).

THEORETICAL OVERVIEW

Existing studies of how balancing efficiency and flexibility can be accomplished largely emphasize how stability and change in routine dynamics is shaped by endogenous aspects while downplaying the role of exogenous events in routine performances (Feldman and Pentland 2008). An external perspective on routine dynamics can help to extend our understanding of how pressures for efficiency and flexibility can be balanced in contexts where novelty is valued. In such contexts, actors are more intentional about enacting new patterns to generate novel organizational outcomes, but also experience pressures for efficiency that constrain variation in the new routines enacted. In this paper, we use the notion of "spaces" to conduct a more systematic analysis of how balancing is accomplished in settings where novelty is valued.

Spaces

Spaces form when physical and social boundaries separate participants from everyday work (Hendry and Seidl 2003; Howard-Grenville et al. 2011). "Space" provides a language for capturing empirically mundane phenomena, such as meetings, in a way that highlights features that are important for theorizing change in routines. For example, Bucher and Langley (2016) found that reflective spaces were separated from the routine by social, physical, and temporal boundaries whereas experimental spaces were located within the original routine but were constituted by symbolic and temporal boundaries that signaled the provisional and localized nature of experimental performances. The interactions within reflective spaces enabled novel conceptualizations of a routine to be developed; while interactions within experimental spaces enabled the integration of new actions into the routine. Routine change occurred through the iterative enactment of these spaces in relation to each other. While prior studies have examined physical and relational boundaries (e.g., Kellogg 2009; Zietsma and Lawrence 2010), the temporal boundary of spaces has been overlooked (Garud et al. 2015).

Time

The temporal boundaries of a particular space refers to its timing – when and how often it occurs, as well as its regularity, predictability, and cyclicality – and determines how time is experienced and socially organized (Kaplan and Orlikowski 2013; Reinecke and Ansari 2015, 2017). In this paper, we pay attention to the timing of meetings in the scrum routine to gain insights into how time might be implicated in balancing pressures for efficiency and flexibility. Specifically, we present a co-constitutive and active view of time by stressing, on the one hand, that temporal boundaries in the form of spaces are enacted through routine actions (Bourdieu 1977; Garud et al. 2015). On the other hand, time and temporal boundaries also shape the routine actions that can be performed (Emirbayer and Mische 1998; Hernes 2014).

In the broader management literature, discussions of temporalities have focused on "event time" and "clock time" (Ancona et al. 2001), with event time being the dominant temporal perspective in current routine research (Turner 2014; Turner and Rindova 2017).

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Although time is the context that organizations, actors, and routines are embedded in, it is often overlooked as a contextual feature of significance because of the assumed lack of agency over time (Hernes 2014). But routines are not just embedded in, but also enacted through context (D'Adderio 2014). Thus, when intentionality and agency over the timing of spaces is considered (Bourdieu 1977; Reinecke and Ansari 2015), time becomes malleable and subject to explicit modifications through temporal structures - social structures that schedule and pace activities and provide "powerful templates" for taking action (Orlikowski and Yates 2002, p. 685). In organizational life, temporal structures manifest in the use of Gantt charts, deadlines, just in time inventory systems, and the fiscal year (Huy 2001; Yakura 2002). Although the use of these structures to manipulate time for resolving temporal conflict – disagreements about coordination and deadlines – is established, less is known about how time is implicated in balancing conflicting pressures for efficiency and flexibility. From a temporal perspective, pressures for efficiency and flexibility embodies different logics of organizing that encompasses differences in what, when, and how activities are performed (Slawinski and Bansal 2015).

The lack of attention to time is notable in the broader routines literature, leading to calls for more attention to time (Howard-Grenville and Rerup 2017; Turner 2014). To examine how the temporal context and spaces shape routine actions that balance pressures, we focus not only on the mutual constitution of spaces and time, but also on how this co-constitutive relationship influences routine actions. This question guided our analysis: How does the relationship between spaces, time, and routine actions balance pressures for efficiency and flexibility?

METHODS

We used a process oriented ethnographic design to investigate our research question. We focused on time as being subject to agentic modifications (Hernes, 2017), and on the recursive process though which moment-by-moment enactments of routines turned into temporal patterns that shaped the flow of experience over time (Langley and Tsoukas 2017; van Hulst et al. 2017).

Data Sources & Analysis

Between 2009 and 2012, the first author collected all data from three sources: 1) observations of project teams, 2) semi-structured interviews, and 3) archival documents. We used process theorizing to structure our analysis (Langley and Tsoukas 2017). Through three steps, we moved from descriptions of the context and the scrum routine to explanations of how the co-constitution of space and time manifested and contributed to balancing pressures for efficiency and flexibility. These three steps are: 1) Identifying moments in the task environment where participants had to deal with conflicting pressures, 2) tracing how the unfolding scrum routine reproduced specific time orientations, and 3) tracing actions within the scrum routine.

FINDINGS

The scrum process consisted of three-week sprints. The week before a new sprint, a backlog meeting would be held where the goals for the new sprint was hashed out. During the sprint, the team met daily for 15-minute scrum meetings. A map of action patterns (available from the authors) helped us to see how the temporal patterning of actions that enacted the backlog meeting and the daily scrum meeting balanced the inherent pressures for efficiency and

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flexibility. On the one hand, the daily scrum meetings showed up in our data as steady beats at the same time every morning which contributed to a clock time orientation emphasizing efficiency and goal planning. On the other hand, the variety of the action sequences within the scrum showed up in our data as beats emphasizing flexibility.

Space was constitutive of time through the regular, predictable patterning of backlog and scrum meetings, which evoked a sense of clock-time that was objectified through artifacts, such as scrum sheets. Temporal artifacts were in turn constitutive of spaces through their entanglement with the symbolic and relational boundaries of scrum meetings.

Our examination of the actions within spaces in the scrum routine revealed how backlog and scrum meetings were spaces for coalescing and reconstituting (Turner and Rindova, 2012) individual routine performances. These spaces were opportunities for routine participants to develop common understandings and agreements that contributed to coalescing and reducing variation in routine performances. At the same time, the common understandings that formed in these spaces supported the reconstitution of routine performances, such that individual routine performances could be modified in a decentralized manner yet still be collectively synchronized.

Whereas our analysis of spaces centered on actions *within* spaces, our analysis of artifacts examines the actions *around* the use of artifacts. Our analysis of artifact usage revealed how time was used as a tool to support *standardizing* and *reorganizing* processes. Standardizing reduced the complexity of the decision making of routine participants in the midst of their performance, by reducing the range and flexible variation of actions. Time, in the form of deadlines, was used to narrow the range of actions to those that enabled the team to collectively accomplish their goals in the time remaining. Individual actions were standardized, not in a replicative sense, but in a manner that was individually distinct but collectively synchronized. Reorganizing refers to redefinition or changes in the scope of routine goals and the tasks required to accomplish them. Deadlines served as a guidepost for efficiently reorganizing routine goals and tasks with expedience so that the project team could "get back on track" in their progress.

Balancing Efficiency and Flexibility Through Time and Space

Our analysis identifies how the specific duration and timing of scrum meetings became a balancing mechanism which allowed participants to craft and recraft robust working relationships that were simultaneously efficient and flexible. Specifically, scrum meetings were recurring temporally structured spaces with a duration of 15 minutes. Routine participants met in these temporal spaces daily not only for accomplishing work (e.g. producing video games) but also for working out and balancing competing pressures. Our analysis highlighted how spaces and time, objectified in temporal artifacts, generated patterns of actions that allowed the participants to actively balance pressures for efficiency and flexibility.

FIGURE 1 ABOUT HERE

Spaces were instrumental in responding to pressures for efficiency by coalescing (arrow a in Figure 1) a common understanding about project goals and actions among developers. This understanding and awareness of each other's task allowed routine participants to work more efficiently by minimizing potential delays during task handoffs. Furthermore, this collective

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awareness of their interdependencies helped the team to coalesce socially by making explicit how everyone's efforts affected the rest of the team and their collective outputs. While the cognitive coalescence addressed pressures for efficiency by improving coordination and cooperation between developers, social coalescence addressed pressures for efficiency by increasing individual engagement and effort.

Pressures for efficiency were also balanced through the standardizing (arrow b in Figure 1) influence of temporal artifacts on routine goals. In settings where consistency is valued, pressures for efficiency are addressed by standardizing actions, which improves coordination by making routine participants' actions predictable. In settings where novelty is valued more than consistency, the predictability that addresses pressures for efficiency stem from standardizing routine goals across actors rather than actions. Standardizing routine goals across actors narrows the range of actions to those that enable the team to make progress on these goals. Our findings revealed how deadlines were used by developers to identify these goals. Deadlines compelled developers to narrow the range of actions to routine goals that could be accomplished in the time remaining for the sprint. Pressures for efficiency were addressed by using deadlines to channel collective action towards accomplishing routine goals.

Pressures for flexibility manifested as tendencies for incorporating innovations and non-standardized actions to deliver novelty. These moves inevitably led to dynamic, unpredictable circumstances which project teams responded to by either adjusting the priorities of different routines (arrow c in Figure 1: reconstituting) or altering the steps within routines (arrow d in Figure 1: reorganizing). While reconstituting refers to individuals changing their task priorities, reorganizing involves routine modification, such as changing actions within routines.

Spaces were implicated in addressing pressures for flexibility through the common understandings and awareness of team actions developed during backlog and scrum meetings, which facilitated the reconstitution of actions within routines (arrow c in Figure 1). Knowledge of other developer's actions and their mutual dependencies allowed developers to reprioritize their tasks so that the team was still working in sync despite the changes. Similarly, deadlines also enabled actors to address pressures for flexibility by being used as a cue and a boundary for reorganizing routines. Deadlines trigger considerations for reorganizing as developers came to realize that their original goals cannot be accomplished in the time remaining, which requires a reorganizing of routine goals (arrow d in Figure 1). At the same time, deadlines also acted as a boundary marker for how routine goals should be reorganized by selecting and defining goals that can be completed by the deadline.

Our analysis of routine actions – within spaces, as well as around temporal artifacts – revealed how spaces and time simultaneously addressed pressures for efficiency and flexibility. However, as we zoom out from actions to consider how the context enabled or constrained these actions, our data revealed the mutually constitutive relationship of spaces and time. The regular patterning of backlog and scrum meetings evoked a clock-time orientation that was objectified through artifacts such as deadlines and scheduling tools like scrum sheets (arrow e in Figure 1). These artifacts were then implicated in constituting spaces by giving form to the temporal boundaries of scrum and backlog meetings that were entangled with its symbolic and relational boundaries (arrow f in Figure 1). This mutually constitutive relationship between spaces and the temporal context is a key difference between our conceptual model and Turner and Rindova's (2012) model which was developed in a setting where consistency was valued. Thus, in contrast to settings where actors are required to maintain consistent performances, in settings where actors are required to generate novelty consistently, we find the co-constitutive relationship

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between spaces and time to drive the basic mechanisms of coalescing, reconstituting, standardizing, and reorganizing for balancing conflicting pressures of efficiency and flexibility.

DISCUSSION

We show how the regular time-based patterning of the scrum routine established a temporal context for the less predictable event-based sequencing of individual routine performances to unfold. These findings extend the literature by showing how event- and time-based patterning relate as a duality (Farjoun 2010) that is implicated in maintaining the corresponding duality between pressures for efficiency and flexibility. Our findings also provided deeper insights into the mutually constitutive relationship between spaces and the temporal context in routine dynamics (Howard-Grenville and Rerup 2017). We showed how spaces are given form through actors' interactions with temporal artifacts, and how temporal artifacts simultaneously shape practices inside the spaces.

REFERENCES AVAILABLE FROM THE AUTHORS

Figure 1. Conceptual model of the co-constitution of time and space in balancing pressures for efficiency and flexibility