Multiple Team Membership: A Theoretical Model of Its Effects on Productivity and Learning for Individuals and Teams

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ABSTRACT

Organizations use multiple team membership to enhance individual and team productivity and learning, but this structure creates competing pressures on attention and information, which make it difficult to increase both productivity and learning. Our model describes how the number and variety of multiple team memberships drive different mechanisms, yielding distinct effects. We show how carefully balancing the number and variety can enhance both productivity and learning.

Surveys estimate that 65-95 percent of knowledge workers across a wide range of industries and occupations in the United States and Europe are members of more than one project team at a time (which we refer to as *"multiple team membership"*) and, in some companies, it is common for people to be members of five, ten, twelve or more teams at a time (Martin & Bal, 2006; Zika-Viktorsson, Sundstrom, & Engwall, 2006). As noted by Milgrom and Roberts (1992), firms adopt this approach to organizing work to leverage their resources more effectively and to promote knowledge transfer – i.e., to enhance both productivity and learning. However, classic work on the productivity dilemma (Abernathy, 1976) suggests that the routines put in place to enhance productivity often hinder the practices that foster learning (Adler et al., 2009; Benner & Tushman, 2003), with learning and performance often working at cross-purposes – especially in teams (Bunderson & Sutcliffe, 2003; Singer & Edmondson, 2008).

Given this tension between productivity and learning, understanding when and how both can be optimized in the context of multiple team memberships would be useful. In this paper, we propose a model of multiple team membership and its effects on learning and productivity. The model is guided by attention and social network theories, which are particularly useful because people have increasingly unlimited access to information (through new technologies and rapidly widening networks), but limited abilities to attend to and process that information (Borgatti, Mehra, Brass, & Labianca, 2009; Gallagher, 2009; Jackson, 2009; Ocasio, 1997). Thus, two critical commodities in the current, highly networked economy – attention and information (Hansen & Haas, 2001; Hudson, Christensen, Kellogg, & Erickson, 2002) – are precisely the resources that are most central to managing multiple team memberships. The model we propose explores how multiple team membership draws heavily on these resources and addresses two questions: How are productivity and learning affected by multiple team membership? and How can both outcomes be enhanced simultaneously?

We argue that two elements of multiple team membership – the *number* of teams of which individual workers are members and the *variety* of those teams – influence productivity and learning and we propose a model that specifies these influences at the individual and team levels of analysis. As our model shows, the more teams people are on, holding the variety of those teams constant, the more productivity but less learning there will be. However, these productivity gains do not continue unabated; they eventually plateau and turn negative as the number of team memberships continues increasing. Conversely, the more variety there is in the teams, holding the number of team memberships constant, the more learning but less productivity there will be. As with productivity, these learning gains eventually plateau (but do not turn negative, as people and teams do not experience "negative learning"). Furthermore, the *number* of teams of which individual workers are members can have a focusing effect on individual attention, leading individuals to seek out more efficient work practices and leading teams to focus on key priorities in their work. This focusing of attention can enhance productivity while reducing learning. However, the *variety* of teams of which individual workers are members can increase the diversity of information individuals and teams encounter, stimulating learning, but at the expense of productivity.

With our model, we make three key contributions. First, our model shows how multiple team membership can enhance both productivity and learning, but only if the countervailing effects of number and variety are carefully balanced. Second, we push beyond simple "multi-tasking is bad" arguments (Rosen, 2008) by separating multiple team membership into its key component parts of number and variety and explicating their distinct theoretical relationships with productivity and learning. Third, we move beyond the individual level of analysis to explicate the mechanisms that drive its effects for teams. Some elements of individual productivity and learning aggregate to affect team productivity and learning, but the mechanisms by which multiple team membership

drives productivity and learning at each level are distinct. In the sections that follow, we briefly review the related research. Then we define key terms, present our model, and discuss scholarly and managerial implications.

RESEARCH ON MULTIPLE TEAM MEMBERSHIP

As noted in the introduction, being on multiple teams is increasingly common and is found in a wide range of contexts. It appears especially common in highly competitive settings characterized by pressure for both productivity and learning, such as information technology, software development, new product development and consulting (Milgrom & Roberts, 1992; Wheelwright & Clark, 1992). However, as noted by other researchers, most of the existing research on teams "has focused on intact teams without accounting for the possibility of multi-teaming" (Chudoba & Watson-Manheim, 2007: 67). Despite some scholars' acknowledgment that multiple team membership "is quite prominent these days," research on it has been "scant" enough that a recent review described it as one of six areas in teams research that warrants attention and noted that "very little is known about its implications for teams and individuals alike" (Mathieu, Maynard, Rapp, & Gilson, 2008: 442). The need to understand the implications of multiple team membership is heightened in knowledge-intensive environments where attention is an especially scarce resource (March & Simon, 1958); where individuals, teams, and organizations strive to allocate their focus and attention in ways that maximize productivity and learning; and where those efforts are "much neglected issue[s]" in research (Schmidt & Dolis, 2009:690).

Although only a handful of studies have directly addressed multiple team membership, other research addresses related constructs and processes at the individual and team levels. At the individual level, research on multitasking deals with the micro processes and cognitive implications of an individual switching between two tasks, or of "true" multitasking where people work on two or

more tasks *simultaneously* (e.g., driving a car while talking on a cell phone or using a Blackberry while participating in a team meeting) (Leroy, 2009). These two versions of multitasking have also been described as time swapping and time sharing (Waller, 1997). Multitasking has been studied in relation to specific behaviors like communication (Reinsch, Turner, & Tinsley, 2008) as well as traits like polychronicity (e.g., Bluedorn, 2002), which influences individuals' preference for and success at multitasking or interruption handling (e.g., Jett & George, 2003). Multitasking research is an important foundation for our own model, but has been conducted solely at the individual level, has dealt primarily with peoples' cognitive capacities, and generally addresses switching frequency and switching costs in terms of extremely small time periods – generally less than a minute (Altmann & Gray, 2008). Thus, existing research sheds little light on the team-level implications of individuals working on two or more teams, nor does it address the effects of on individuals' switching between or among *teams*. Like individual multitasking, multiple team membership leads to some task switching (by definition), but it can also include a much broader set of switches between team contexts (rather than between simple tasks). Those team contexts often include different tasks, roles, routines, technologies, locations, etc., which make switching between them both more effortful (in terms of time and attention) and more potentially valuable in terms of learning.

At the *team* level, the research most relevant to multiple team membership concerns boundary spanning. That work (e.g., Joshi, Pandey, & Han, 2008) shows how having members span boundaries can affect teams' emergent states and processes. Importantly, however, this research is framed in terms of individuals' cross-boundary roles and activities regarding a single team – paying relatively little attention to the multiple team contexts people may span. In addition to the boundary spanning research, a few studies address how groups divide their attention across multiple tasks

(Waller, 1997), but do so within the bounds of a single focal team. They do not address the competing demands on team members' time that are generated by their multiple team memberships.

In summary, while providing valuable insights into processes and situations related to multiple team membership, existing research typically addresses only individual multi-tasking, does not consider the distinct impact of being on more than one team, and examines only productivity or learning – not both. In addition, previous research on the effects of fragmented attention has typically addressed either the positive *or* negative effects of that fragmentation, but not both. For example, research on interruptions has treated them as either harmful (e.g., Perlow, 1999) *or* beneficial (e.g., Zellmer-Bruhn, 2003) and research on "project overload" (as the name itself suggests) is focused solely on the negative implications of individuals' over-commitment (Zika-Viktorsson et al., 2006). This research rarely acknowledges or models simultaneously positive and negative effects operating through different processes.

Though the research summarized above is valuable in various ways, it does not resolve the critical tensions associated with multiple team membership, learning, and productivity. Resolving these tensions is theoretically interesting because existing research does not explain how or why multiple team membership can yield both positive and negative effects, nor does it address why organizations adopt it despite much advice to the contrary (e.g., Wheelwright & Clark, 1992). We focus on the relationships with productivity and learning because they are the key outcomes that are in dynamic tension for organizations using multiple team membership as an approach to structuring work. Furthermore, each has its strong proponents in the literature on individual and organizational performance; some positing that "Productivity is arguably the most important measure of team success" (Thompson, 2008:36-7), while others claim that "the ability to learn and adapt is critical to the performance and long-term success of organizations" (Argote & Miron-Spektor, in press). Thus, we

focus on productivity and learning because they are: 1) central to many of the other outcomes sought by individuals, teams, and organizations; 2) critical components of a holistic view of performance (Hackman & Katz, 2010); 3) most vulnerable to the fragmentation of time and attention (Ocasio, 1997); and, 4) applicable across levels of analysis. Multiple team membership may well affect other variables as well (e.g., identity and career progression), and we hope such effects will be explored by future research.

MODEL DEVELOPMENT

Before presenting our model itself, it is important to define several of the key concepts on which it is based (team, membership, and time period) and two dimensions of multiple team membership (number and variety). *Teams* are bounded sets of individuals that work interdependently toward a shared outcome (Hackman, 2002). Individuals are *members* of a team when they share the responsibility and reward (or penalty) for the outcomes of the team's work and recognize each other as members of the team. Finally, the *time period* during which we consider team membership is context-specific. In contexts where teams are relatively short-lived (e.g., computer emergency response teams or hospital emergency room teams), 24-48 hours is a period over which multiple team membership and its effects could be assessed meaningfully. In contexts where teams are longer-lived (e.g., software development), the relevant period might be weeks or months. Thus, any empirical study of multiple team membership must take the general context (Johns, 2006) and temporal structures (Ancona, Goodman, Lawrence, & Tushman, 2001) of the research setting into close consideration. In addition, although people can occasionally extend their work hours, we assume that the total time available for people's work is finite. Accordingly, the time individuals dedicate to any one team must be reduced when they become members of multiple teams. Furthermore, for every additional team that someone joins, they must shift their attention and activity at least once from

Team 1 to Team 2 (and some choose or feel compelled to shift their focus back and forth more frequently).

As multiple team membership has become more common over the last several decades, two theories have also emerged as especially valuable for understanding the dynamics of 21st century work. Attention-based theories highlight the increasing number of demands that compete for people's attention (Hansen & Haas, 2001; March & Simon, 1958; Ocasio, 1997). Social network theories highlight how network-enabled exposure to a wider variety of information affects learning and productivity (Reagans & Zuckerman, 2001). Thus, in our model, we focus on the number and variety of teams as two related but distinct dimensions, which we predict drive the effects of multiple team membership on productivity and learning. The first dimension is the *number of teams* of which an individual is concurrently a member, which would be captured at the team level as the number of unique, non-overlapping "other" teams with which the focal team's members are also involved

The second dimension of multiple team membership – *variety of team memberships* – refers to the diversity (in tasks, technologies, locations, etc.) characterizing the teams of which individuals are members and with which a focal team overlaps. We draw on Harrison & Klein (2007: 1203) to conceptualize variety of team memberships as a form of diversity that captures the "composition of differences in kind, source, or category of relevant knowledge or experience among unit members." This type of variety is typically measured using entropy indices like Blau's (1977) or Teachman's (1980), which gauge how widely spread an entity is (i.e., evenness) across how many different categories (i.e., richness), and then standardized and cumulated across the diversity variables relevant in any given context. For example, Cummings (2004) averaged Teachman indices of team members' geographic locations, functional assignments, reporting managers, and business units to measure

variety's relationship with knowledge sharing and team performance. For our purposes, an even spread across the richest number of information sources and diversity variables yields maximum variety for each individual's portfolio of teams or for any given focal team.

As we describe in detail later, variety or "the number and spread of "batches" of information content, experience, or unique network ties available across unit members … broaden[s] the cognitive and behavioral repertoire of the unit" (Harrison & Klein, 2007: 1204). The "heterogeneity of new ideas, processes, and routines" that is valuable for individuals and teams comes from "other concurrent and past teams" (Zaheer & Soda, 2009: 3). There are many variables across which one might measure variety of teams; in practical terms, examples of the variables affecting the relationships among variety, productivity, and learning include (but are not limited to): members' roles, network ties, functional experience, and industry background; and teams' tasks, norms, locations, and technologies in use.

Variety of multiple team memberships is partially structural and partially the result of individual and managerial actions. Structurally, some organizations may just be more complex and diverse, with the potential for higher variety of team memberships as a result. However, complex organizations can increase or decrease this kind of variety based on how they assign people to teams. Individuals can – to varying degrees – increase or decrease their number of team memberships. Similarly, any given team or team leader can seek out members who are able to devote more (or less) of their time to the team, thus decreasing the number of multiple memberships at the team level.

Conceptually, the number and variety of team memberships parsimoniously capture the challenges and opportunities for productivity and learning posed by a multi-team environment. For example, at the individual level, being a member of a greater *number* of teams motivates individuals to find more efficient work practices, but it can also reduce the time and attention necessary for

learning to occur effectively. Similarly, a focal team whose members are on a wider *variety* of other teams exposes the focal team to more unique information, which can stimulate learning, but also poses coordination challenges for the team, which can reduce productivity. We develop these relationships and our overall model in more detail below.

Before doing so, it is important to note several assumptions that we make in our model. First, we hold constant those constructs that could potentially affect productivity and learning but that are not explicitly included in our model. For each proposition regarding number of memberships, we hold variety of memberships constant (and vice versa for each proposition regarding variety of memberships). Second, a complete model of multiple team membership's antecedents and consequences is not our intent. Rather, we hope our model captures the key elements of multiple team memberships' effects on productivity and learning, and stimulates additional theoretical and empirical work regarding these and other aspects of people's experience working in multiple teams. In the sections that follow, we present four core propositions at the individual and team levels. We summarize these propositions in Figure 1.

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Insert Figure 1 about here

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The Curvilinear Effects of the Number of Multiple Team Memberships on Productivity

At the individual and team levels, productivity refers to the ability to create products or services that meet the expectations of key stakeholders in a given time period with a given set of human and other resources (Adler et al., 2009). The key distinction between productivity at the individual and team levels is the range of resources that must be coordinated at the team level (including disparate information, schedules, and social dynamics), introducing additional complexity,

which goes beyond simple aggregation effects (Steiner, 1972). At both levels, productivity is a complex, multi-dimensional phenomenon (including various manifestations of quality, quantity, time, value, etc.) and is considered one of the key criteria for work effectiveness (Adler et al., 2009; Thompson, 2008). We consider two of the most common dimensions of productivity – turnaround and utilization – as they relate to multiple team membership.

Turnaround captures the amount of time used to produce a given quantity of goods or services – the elapsed time from the receipt of a task to its completion. For example, if it took a TV news crew one week to produce a 5-minute feature story after it was assigned, the team's turnaround would be one week for that piece of work. Turnaround incorporates both the actual process time (when the crew was actively working on the story) and the queue time (when the feature story got set aside for a day because the crew had to a cover a story about a breaking news event). If the crew finds ways to be more efficient in its production of the story, they can lower their process time, and consequently their turnaround. Reducing the influence of other demands can reduce queue time, and consequently their turnaround. Another tactic would be to reduce quality to reduce turnaround time. However, for the purposes of our model, we hold quality constant. Turnaround time can be measured at the individual or team level, representing the distinct combination of inputs at each level. The more process losses a team experiences, the longer its turnaround time will be (Steiner, 1972).

Utilization captures the extent to which resources are being used as opposed to sitting idle. For our purposes, it refers to the percent of time an individual is actively engaged with one or more team projects. In contexts such as law and consulting, this is the percentage of "billable hours" that individuals have in their schedules. In general, organizations strive to keep employees actively engaged in project work, minimizing everyone's "beach time" and maximizing their utilization. Utili-

zation is measured at the individual level (e.g., what percentage of her time is the TV crew's camerawoman actively working on a story) and, unlike turnaround, exists at the team level only as an aggregation of individual team members' utilization. While multiple team membership may affect people's workloads, it does not exert its influence solely by increases in workload. Theoretically, one could be on more teams, yet have less work (or vice versa).

Although turnaround and utilization are distinct dimensions of productivity, they are not fully independent. Individuals can be very productive in terms of turnaround on a given project without being fully utilized (i.e., while still having time available to work on other team projects), however increases in utilization will also eventually affect turnaround (Kc & Terwiesch, 2009). As we describe in detail below, the number of multiple team memberships affects turnaround via the development of better individual and team work practices, while it affects utilization through the better allocation of individuals' time.

Individual productivity. At the individual level, we propose that the number of multiple team memberships improves productivity in terms of both utilization and turnaround time by facilitating load balancing across team projects and by focusing people on key priorities and efficient individual work practices within each team. However, as multiple team membership increases above a moderate level, queue times for individual projects increase as individuals struggle with competing demands, offsetting some of the efficiencies initially achieved and, eventually, decreasing productivity.

By enabling people to allocate their time and attention in ways that reduce downtime, being on more teams increases the utilization aspect of individual productivity. Workloads are inevitably uneven, with teams' demands on individual members' time varying significantly over the course of those teams' life cycles (Evans, Kunda, & Barley, 2004; Westenholz, 2006). As a result, individuals

frequently face unproductive downtime because they are waiting for hand-offs from someone else or because there is a lull in a project (Shank, 2007; Yakura, 2001). Being on more teams concurrently gives individuals more opportunities to offset the ebbs in one team's work with the flows of another team's work. The more teams individuals are on, the less likely they are to have gaps in their schedules and the more fully "utilized" they will be. Milgrom and Roberts (1992, p: 409) note that being on only one team is "directly inefficient" because of the "uneven time-pattern to the work." In practice, many firms strive for maximum utilization of their employees' time (Adler, Nguyen, & Schwerer, 1996) and the ability to assign that time in small increments to multiple teams supports that utilization-maximizing goal.

However, this positive effect on utilization does not continue unabated. Other things being equal, the positive load balancing effect of multiple team memberships on utilization tapers off over time. This is consistent with Wheelwright and Clark's (1992) findings of increased productivity when engineers began adding projects, but decreasing productivity as they continued to do so. Similarly, in a medical context where projects were patients, Kc and Terwiesch (2009) found that when hospitals split staff across more projects they achieved higher utilization, but that while such high utilization was maintained for long periods of time, productivity increases were not sustainable and eventually dropped off.

Being on an increasing number of teams creates time pressure, which can lead people to develop work practices that reduce process time and (as long as queue time is held to a minimum) improve overall turnaround (Kc & Terwiesch, 2009; Svenson & Maule, 1993; Waller, Conte, Gibson, & Carpenter, 2001). When people add second, third, fourth, etc. teams to their daily or weekly activities, it "demands that individuals enact specific efforts to coordinate, manage, and track those collaborations" (Gonzalez & Mark, 2005:144) and leads them to think more carefully about how

they use the fractions of their time that are available to each team (Karau & Kelly, 1992). Among other things, the time pressure created by more team memberships leads people to prioritize, sequence, and "time box" or compartmentalize their available hours more actively (Hudson et al., 2002; Tobis & Tobis, 2002), and to be more focused when they are working. As Mark, Gudith, and Klocke (2008: 110) have shown, if people expect that they will have to divide their time and attention between multiple teams, they will "develop a mode of working faster … to compensate for the time they know they will lose." For example, Kc and Terwiesch (2009) found that splitting staff across more projects increased productivity, with the busier staff working more efficiently. Jett and George (2003) also note that being on multiple teams triggers the kind of interruptions that can create a stimulating rhythm in individuals' work practices, which helps their long-run performance. Thus, driven by more team memberships, new, more focused work practices enhance individuals' productivity. As with load balancing, we expect that work practice efficiencies eventually plateau and are offset by increased queue time when the number of multiple team memberships is high

As individuals take on larger numbers of teams, each additional team exacerbates the division of people's attention and slows their re-engagement with any one team's work (Hopp & Van Oyen, 2004; Huey & Wickens, 1993). Thus, even though multiple team membership enhances utilization in a way that is "very attractive" for management, and even though it can lead to the development of more efficient work practices, beyond a moderate level (possibly at only three teams) it introduces bottlenecks and slows turnaround (Slomp & Molleman, 2002).

Team productivity. At the team level, we propose that the number of team memberships increases productivity by prompting teams to adopt more efficient collective work practices, while simultaneously decreasing the team's opportunities to work collectively. In this sense, the mechanism by which multiple team memberships increase team productivity is analogous to the one that

increases individual productivity, but it is manifested in terms of team members' collective consciousness about the time pressures facing them (Waller et al., 2001) and teams' collective efforts to develop more efficient team practices. Without at least some mild stress on the system, people tend to budget more generously than the task actually demands (Brooks, 1995) and be less likely to find more efficient methods of conducting their work (Huey & Wickens, 1993). Knowing that they have smaller fractions of each other's time, and knowing that the coordination of that time will be challenging, team members develop ways to accomplish more in less time. These practices may include more focused, structured meetings, in which teams consciously spend more time on-task and less time on social, relational, or other interactions. The pressure on team members' schedules from being on multiple teams "can trigger certain activities by teams to reassess [their] existing structures and enact new structures" (Fuller & Dennis, 2004: 2). There is eventually a quality/quantity tradeoff, but teams working under tighter time constraints do tend to produce at a faster rate (Kelly & McGrath, 1985; Waller, Zellmer-Bruhn, & Giambatista, 2002).

Although an increasing number of team memberships can decrease processing time through more efficient work practices, it can also increase queue time as competing demands on members' time from other teams reduce the time available for synchronous work in any focal team. As a focal team's members divide their time across multiple teams, they have less than 100 percent of their time to work on each team and the blocks of time they do have available are less likely to be aligned. This temporal misalignment means that more work must be done asynchronously, coordinated, and then re-integrated, which increases the team's queue time (Postrel, 2009; Wittenbaum, Vaughan, & Stasser, 1998). Longer queue times eventually offset the gains in processing time arising from better team work practices and, thus, we expect the work-practice benefits of having many

members with multiple team commitments yields diminishing returns for teams – increasing at a decreasing rate towards an asymptote.

Prop. 1: The relationship between the number of teams of which individuals are members and productivity at the individual and team levels is curvilinear; the positive relationship increases at a decreasing rate and eventually turns negative.

Negative Effects of Variety of Team Memberships on Individual and Team Productivity

Moving beyond the effects of the number of teams of which an individual is a member, a separate and distinct dimension is the variety of those teams. As we describe below, this variety has a negative effect on productivity. In settings where the number and variety of teams are positively correlated, the negative effect of membership variety may offset some or all of the productivity gains that arise from the initial increases in the number of memberships.

Individual productivity. At the individual level, higher variety in the teams of which one is a member means a greater amount of information must be managed, necessitating that more of people's time and effort must be spent adjusting to different team contexts and their associated people, tasks, technologies, roles, locations, etc. (DeMarco, 2002; Huey & Wickens, 1993; Milgrom & Roberts, 1992). These switching costs reduce individual productivity by increasing turnaround. The more different the "working spheres" associated with each team are, the more the switches between those teams disrupt routines and hurt productivity (Mark, Gonzalez, & Harris, 2005). Holding the number of memberships constant, the variety of memberships will be negatively related to individual productivity due to increased information load, leading to greater processing time and, consequently, turnaround. When one switches among three relatively similar teams, the diversity of information to be managed is reduced, and switching has far less of an effect on productivity than switching between three relatively different teams (Hopp & Van Oyen, 2004; Rubinstein, Meyer, &

Evans, 2001). When variety is greater, job scope and complexity are greater and are accompanied by high levels of strain, leading to reduced productivity (LePine, Podsakoff, & LePine, 2005). As we discuss later, individuals can manage these switching costs more or less effectively depending on their work practices.

Team productivity. At the team level, the variety members experience as they switch between teams results in lower productivity for the focal team. This is due to the increased coordination costs among members leading to longer turnaround times. Variety in team membership increases the complexity of the information teams members must manage (Cronin & Weingart, 2007) and the likelihood that members' schedules will be difficult to align. In addition, as the variety of team memberships increases, teams must devote more time to managing the associated variance in perspectives, mental models, and capabilities of team members (Massey, Montoya-Weiss, & Hung, 2003; Zaheer & Soda, 2009), which decreases productivity.

Prop. 2: The variety of multiple team memberships is negatively related to individual and team productivity.

Positive Effects of Multiple Team Membership Variety on Individual and Team Learning

Although the variety of multiple team memberships will have negative effects on productivity (Prop. 2), we argue that such variety can enhance learning, primarily through the increased variety of ideas and information from which to draw insights. Holding the number of multiple team memberships constant, exposure to a wider variety of inputs can reduce the possibility of tunnel vision and raise the probability that better ideas and approaches will be discovered. Although multiple team membership-driven variety enhances learning initially, it does not do so *ad infinitum*; eventually, the learning benefits plateau. We propose that this effect of membership variety on learning

occurs at the individual and team levels, but note that learning at these levels is a distinct process (Argote & Miron-Spektor, In press), which differs in three key ways.

First, learning at each level differs with respect to content. Team learning is, by its very nature, not solely about an increase in domain knowledge (which would reflect aggregated individual learning), but also about improving processes processes and team "repetoires" (Wilson, Goodman, & Cronin, 2007). Second, learning at each level differs with respect to scope. In contrast to learning at the individual level, in which one person samples from a set of teams and experiences and then integrates that knowledge, at the team level, many individuals sample from many different teams. Finally, although research on learning at different levels is converging (Argote, 2009), individual and team learning differs in terms of mechanisms, where individuals can learn from the simple exposure to or transfer of new information, while teams require shared experience and the development of a new set of behaviors or repertoires in order to learn (Argote & Todorova, 2007). Therefore, we argue that the variety of multiple team memberships generates more varied inputs and creates sufficient interpersonal connections to stimulate learning for individuals and teams.

Individual learning. At the individual level, as variety of memberships increases, people have access to more diverse inputs and, thus, more opportunities to learn (Mark et al., 2005). Variety is a critical component of individual learning (Schilling, Vidal, Ployhart, & Marangoni, 2003; Wiersma, 2007). Deliberate *sequential* variation in employees' contexts is a traditional element of job rotation and other personnel movement, which scholars across several disciplines have shown enhances individual learning (e.g., Ortega, 2001). Unlike traditional job rotation, multiple team membership allows for *concurrent* and serendipitous variation in the information to which one has ready access (Hudson et al., 2002), as well as the opportunity for more immediate application and integration of that new knowledge. Firms that assign employees to only one team at a time "might

then be at a competitive disadvantage in the labor market" because of the lost opportunities for learning that multiple team membership affords (Milgrom & Roberts, 1992: 409). Contextual variety also can stimulate learning processes themselves, especially when people's multiple teams expose them to more "cool" (Grabher, 2002) or motivating work (Hackman, Pearce, & Wolfe, 1978), involving knowledge or skills that are perceived to be more valued or desirable. Holding the number of teams constant, we argue that multiple team membership-driven individual learning occurs when being on multiple teams increases the variety of experiences to which individuals are exposed.

While a moderate amount of variety can aid learning, several studies on analogical learning have shown that it is difficult for individuals to transfer analogous solutions when contexts are too different (e.g., Novick, 1988; Reeves & Weisberg, 1994). As a result, we expect that high levels of dissimilarity across teams eventually hinders learning. Thus, although we expect the relationship between variety of teams and learning to be positive, it is likely to reach a "saturation point" (Dahlin, Weingart, & Hinds, 2005; Kenis & Knoke, 2002). Beyond that point, the diversity of inputs is so great and members' information so varied that it is unlikely to trigger any additional learning in the team. In short, learning appears greatest when there is both some difference and some overlap in members' skills and experiences (Heimerl & Kolisch, 2010).

Team learning. At the team level, the diversity of inputs in teams resulting from membership variety enhances team cognition (Hinsz, Tindale, & Vollrath, 1997) and ultimately team learning (Subramaniam & Youndt, 2005; Wong, 2008). Along with productivity, team learning is one of the "key criteria" for team effectiveness (Thompson, 2008:36). This link between diverse inputs and team learning has been found by many scholars in multiple contexts (Bunderson & Boumgarden, In Press). Increasing membership variety means that members of the focal team are experiencing work in more different teams and can bring knowledge acquired in those other teams to the focal team.

As Ruff (2006) notes, membership variety promotes learning because "each team member maintains a broad set of knowledge and methods" and concurrent "work in very different projects encourages the discovery of 'latent' opportunities and promotes the *exchange of knowledge* [italics in the original]" across different teams. However, as with the individual level effects on learning, we expect a similar threshold point above which increasing the variety of teams with which a given team overlaps (through its shared members) only makes information gained from those teams less applicable to the focal team's context and only makes it more difficult to sustain meaningful connections with those teams (Kenis & Knoke, 2002).

Prop. 3: Holding the number of team memberships constant, the variety of teams individuals are members of is positively related to learning at the individual and team levels, with learning increasing at a decreasing rate.

Negative Effects of the Number of Team Memberships on Individual and Team Learning

While increasing the variety of multiple team memberships can improve learning, increasing the number of concurrent team memberships can undermine it. At both the team individual and team levels, the primary mechanisms through which learning is undermined are: 1) the reduction of the time available to attend to and integrate new information effectively; and, 2) the effect that a greater number of teams has in focusing individual and team attention on only critical immediate tasks.

Individual learning. As discussed above, more team memberships lead individuals to prioritize key tasks and to seek out efficient methods of task completion. Furthermore, while more teams might lead individuals to work more efficiently, more teams also deprive individuals of the time needed to seek out and integrate new information. When time pressure is too high, it limits people's exploratory thoughts, behaviors, and ability to encode and retrieve knowledge (Amabile &

Mueller, 2008; Bailey, 1989), which is detrimental for learning (Jett & George, 2003; Perlow, 1999). By contrast, individuals working on a smaller number of teams have more time per team. This results in less time pressure and allows individuals to leverage brief breaks between projects for subconscious learning (Zhong, Dijksterhuis, & Galinsky, 2008). More slack time allows individuals to experiment more actively with new approaches, to appreciate new nuances more mindfully, and to generalize experiences from team to team (DeMarco, 2002).

Team learning. As the average number of teams per member increases, each team member has less time to dedicate to the focal team, making it more difficult to for the team to integrate knowledge and develop shared repertoires (Wilson et al., 2007). When teams have high schedule constraints (e.g., their members' schedules lack contiguous blocks of time), coordinating their efforts is more difficult (McGrath, 1991) and team members typically have *less* slack time for the activities that foster collective learning (Haas, 2006). Shared information processing activities are critical to team learning and, as shown in analogous situations where membership actually changes, team members' frequent comings and goings hinder team learning (Van der Vegt, Bunderson, & Kuipers, In press). In contrast, when teams spend more time together, they become more familiar with one another and are better able to generalize team-encoded roles and routines across tasks (Lewis, Lange, & Gillis, 2005; Staats, Gino, & Pisano, 2010), which is an important hallmark of team learning (Wilson et al., 2007). Thus, because temporal constraints associated with the number of team memberships significantly inhibit teams' ability to have such real-time interaction, team learning suffers.

Prop. 4: The number of teams individuals are members of is negatively related to learning at the individual and team levels.

DISCUSSION AND IMPLICATIONS

Although many (if not most) academics have personal experience with multiple team membership (working concurrently on multiple teaching, research, and service teams), to the best of our knowledge, this paper is the first attempt to model the mechanisms driving its effects on individuals and teams. We believe this has numerous theoretical and methodological implications for scholars and practitioners.

Scholarly Implications – Theoretical

We believe a focus on multiple team membership suggests a number of intriguing and important directions for future research. These include individual-level research on identity issues and employee skills that are conducive to multiple-team membership; team-level research on the connections to geographic distribution; cross-level research on context switching and productivity; and multi-level research on information transparency. While we briefly address each of these in turn, we do not intend them as an exhaustive list, but rather as examples of areas for future work in this domain and an attempt to stimulate future research.

At the individual level, a shift to the multi-team perspective has strong implications for research on identity and multiple identities. Stemming from early work by Tajfel (1981), we now have a large body of theory and research on social identity and categorization within organizations (see, Hogg & Terry, 2000). There is also a burgeoning literature on multiple and dual identities (e.g., Foreman & Whetten, 2002; Hillman, Nicholson, & Shropshire, 2008). Potentially competing spheres of one's life (e.g., work and family, Rothbard, Phillips, & Dumas, 2005), interpersonal relationships at work (Sluss & Ashforth, 2007), and the geographic dispersion of work (Thatcher & Zhu, 2006) may all trigger competing identities. Multiple team membership creates potentially competing team-level bases for identification, increases the number of relationships people have,

and appears to be correlated with geographic dispersion. Thus, given how easy it is to trigger inter-group competition (Tajfel, 1981), membership in multiple teams within the same organization may be enough to cause identity-related tensions and conflict (Fiol, Pratt, & O'Connor, 2009) without requiring broader socio-religious bases for those conflicts. Because most research on identification has addressed organizational targets (Johnson, Morgeson, Ilgen, Meyer, & Lloyd, 2006), multiple team membership represents an important context (and cause) in which to understand how individuals identify with multiple, alternative, work-related targets.

In addition, organizational and social skills, as well as other individual characteristics related to multitasking, time allocation, and the pursuit of multiple goals (e.g., Hecht & Allen, 2005; Schmidt & Dolis, 2009; Schmidt, Dolis, & Tolli, 2009) are likely to rise in importance in settings where individuals must navigate tensions among competing teams and priorities. Individuals and teams are likely to adopt a variety of practices in response to the pressures and opportunities they experience in a multi-team environment. The effectiveness of these practices will be an important topic for future research, as will individuals' abilities to managing their multiple commitments and say "No" to requests that exceed their capacity.

At the team level, the relationship between geographically dispersed work and multiple team membership is another area for future research. Accessing individual expertise is a key motivator for using multiple team membership as a way to structure work, as it allows teams to leverage the time of experts more efficiently by allowing them to utilize their time on an as-needed, less-than-100% basis. Similarly, distributed work in organizations is often motivated by the desire to take advantage of specific expertise that is not physically collocated (e.g., Boh, Ren, Kiesler, & Bussjaeger, 2007). Work by Cummings (2007) begins to explore these issues, finding that being on multiple teams (and having members committed at high levels of time to the focal team) improves focal team

performance – except when geographic dispersion is high. In that case, committing significant time still helped, but being on multiple teams hurt performance, a finding consistent with Lojeski et al. (2007).

Although we do not specifically address the dynamics of multiple team membership at the organizational level in this paper, there are interesting challenges for coordination and resource sharing across teams that are interconnected by membership. Work on multiteam systems has provided numerous insights into related issues of cross-team coordination. For example, Marks and colleagues (DeChurch & Marks, 2006; Marks, Dechurch, Mathieu, Panzer, & Alonso, 2005) have examined issues of leadership, teamwork, and coordination in environments in which multiple teams are working together towards a single ultimate goal. To date, however, that research has largely conceptualized such teams as independent with respect to membership. Thus, it would help to have a better understanding of how these processes unfold when teams are not only interdependent with respect to their goals but also with regard to their membership. For example, how can organizations best coordinate the work of teams when they share members? How can human and technical systems support that coordination most effectively?

We began this paper by noting that organizations adopt multiple team membership as a way to organize work despite the apparent problems associated with switching between teams. When multiple team membership is not managed carefully, these problems can undoubtedly be profound. However, we believe that a purely negative view of multiple team membership is shortsighted. As we have argued in our model, its effects are both positive and negative – depending on the dimension of multiple team membership involved (variety or number) and the outcome in question (learning or productivity). The specific aspect of productivity (turnaround or utilization) also matters. The majority of commentary on multiple team membership focuses on the number of teams and the tur-

naround aspect of productivity, where the effects of number are decidedly negative. However, the number of team memberships has positive effects on utilization are positive, just as the variety of team memberships does on learning. Being more specific about the dimensions of multiple team membership (and the associated outcomes) provides a more nuanced view of the phenomenon – a view that helps explain why organizations have adopted it as a way of structuring work. This more nuanced view may also be useful in helping us understand why there is an apparent disconnect between the individual and team experience of multiple team membership and the organizational adoption of it. For example, organizational decisions to adopt multiple team membership may be driven by a managerial focus on utilization and flexible resource deployment without a clear understanding of the implications for individuals and team. Further research and theorizing could explore this potential relationship.

Scholarly Implications – Methodological

Enhancing our understanding of multiple team membership also provides an opportunity for methodological innovation. Innovative multi-level analysis (see Klein & Kozlowski, 2000) is particularly important due to the non-independence of teams in multiple team membership contexts, and even studies not explicitly focused on multiple team membership should consider controlling for the non-independence of teams. The interdependence in team memberships may also fuel certain phenomena (e.g., contagion or diffusion).

Furthermore, multiple team membership poses an interesting challenge for acquiring accurate information regarding the amount of effort individuals put into different projects, and their performance on them (Meyer, Olsen, & Torsvik, 1996). Workers in multi-team environments may under- or over-report their hours on different projects for a variety of reasons. This can result from organization-based or information systems-based limits to the number of hours or number of projects

that they can report, or it can result from individuals' attempts to carry over, buffer, or hoard time (Yakura, 2001). In situations where such under- or over-reporting is likely, researchers can assess individuals' time commitments using multiple methods, such as surveys or time diaries of individual and managers, as well official organizational time tracking systems. Triangulating among these data sources will provide a more robust understanding of how people divide their time – as well as a better sense of how actual and "official" time use compare. Studying people on multiple teams may also be helpful from a methodological standpoint because people on multiple-teams have a current basis for comparison; they do not have to reach back in their memories to answer common survey questions beginning with the phrase "In comparison to other teams of which I *have been* a member…"

Managerial Implications

Knowing how multiple team membership affects individual and team level learning and productivity, individuals, team leaders, and managers can be more mindful of the implications. The effects of multiple team membership are not purely structural and are subject to individual agency or managerial intervention. In this sense, they are akin to other types of opportunities provided by networks – opportunities that are both "purposive" (agentic) and "positional" (Zaheer & Soda, 2009: 4), enabling and constraining (Giddens, 1984). We believe our model identifies potential leverage points for practitioners seeking to maximize the upside of multiple team membership while minimizing its downside. Some of these leverage points include the timing and selection of switching between teams, the active coordination of schedules across teams, and the explicit definition of roles within teams. Individuals' and managers' interventions at these and other leverage points can make a major difference in how effectively these environments operate, and potentially help explain

how some firms prosper with staff committed to 2-6 times more teams than their competitors (Milgrom & Roberts, 1992: 449).

Multiple team membership can lead to simultaneous multitasking and overly frequent task switching, but it need not involve high levels of either when people can control their schedules and work habits (Spink, Cole, & Waller, 2008). The timing and selection of switches is typically a combination of individual, managerial, and contextual factors, with individuals almost always able to exert some control over their switches. For example, individuals can minimize the potential delays associated with the number of team memberships by time-boxing portions of their schedule (Jalote, Palit, Kurien, & Peethamber, 2004), by not switching mid-task (Loukopoulos, Dismukes, & Barshi, 2009), and by not switching to easier work. However, doing so is not simple given people's tendency to be "switchy" and to shift toward easier work (Payne, Duggan, & Neth, 2007). In addition, scholars have found that people *interrupt themselves* by switching between the work of multiple teams at least as often as they are forced to switch by external forces (Hudson et al., 2002; Mark et al., 2005), and – when faced with two challenging tasks and the belief that they cannot finish both – tend to focus on the work that they can complete more easily (Schmidt & Dolis, 2009). To the extent that individuals exercise some volition and can manage their shifts from team to team and avoid these general tendencies, they can minimize the productivity-decreasing delays that multiple team memberships cause. By effectively batching or sequencing their work so that they make fewer switches between widely varying teams, individuals can also ameliorate the switching costs of membership variety on productivity.

From a managerial perspective, the effects of multiple team membership on team productivity and learning also will be moderated by the active coordination of schedules across teams. When teams' schedules have non-overlapping deadlines and more temporally contiguous blocks of time

devoted to the team's work, such that they are ready to receive hand-offs from teammates and proceed with their portions of the task without a lag, teams can reap the benefits of greater team member utilization and the efficiencies in processing time without the offsetting costs of greater queue times. Furthermore, aligning team member schedules provides greater opportunities for team members to engage in the synchronous interaction necessary to share critical information, reflect on lessons learned, and codify new routines and repertoires (Edmondson, Dillon, & Roloff, 2007; Wilson et al., 2007). Savvy managers can adopt scheduling practices (e.g., regular weekly meetings at fixed times) to enable teams to learn and be productive at higher levels of multiple team membership than would be possible otherwise (Tobis and Tobis, 2002).

Another practice that may be helpful in a multiple team environment is the explicit definition of different types of roles on a team – e.g., whether a member is core or peripheral, or a "consultant" versus a major contributor. This can help employees prioritize their time and set expectations about meeting attendance (Ancona & Bresman, 2007; Haas, 2006). In addition, organizational leaders can carefully monitor the interaction between utilization and turnaround, fighting the urge to maximize the former. Although it is understandable why leaders push for high utilization, it can lead project managers to "force their own projects ahead by commandeering resources, which delay[s] other projects even more" and leave most projects running late (Adler et al., 1996). To address this, they might do well to strive for slightly lower utilization in service of higher turnaround (2006:365).

CONCLUSION

At the outset of this paper, we posed the question: can multiple team membership enhance both productivity and learning? As shown in our model, it can – but only when its costs and benefits are carefully managed. The benefits in terms of productivity and learning come with high costs due

to fragmented attention and coordination overhead. These costs account for the generally negative reaction to multitasking (Rosen, 2008), which spills over to affect impressions of multiple team membership. Further research has the potential to help scholars and practitioners understand more specifically how to manage the competing forces associated with multiple team membership, and how to achieve optimal levels of it in various contexts. For scholars, that understanding is clearly relevant in the non-academic work contexts they study, but it is also personally relevant for faculty members who juggle multiple research, teaching, and service team memberships.

REFERENCES

Abernathy, W. 1976. ***The Productivity Dilemma: Roadblock to Innovation in the Automobile Industry***. Baltimore, MD: Johns Hopkins University Press.

Adler, P., Benner, M., Brunner, D., MacDuffie, J., Osono, E., Staats, B., Takeuchi, H., Tushman, M., & Winter, S. 2009. Perspectives on the productivity dilemma. ***Journal of Operations Management***, 27(2): 99-113.

Adler, S., Nguyen, A. M., & Schwerer, E. 1996. Getting the Most out of Your Product Development Process. ***Harvard Business Review***, 74(2): 134-152.

Altmann, E., & Gray, W. 2008. An integrated model of cognitive control in task switching. ***Psychological Review***, 115(3): 602-639.

Amabile, T., & Mueller, J. 2008. Studying Creativity, Its Processes, and Its Antecedents. In J. Zhou, & C. E. Shalley (Eds.), ***Handbook of Organizational Creativity***: 33-64. NY: Lawrence Erlbaum.

Ancona, D. G., & Bresman, H. 2007. ***X-Teams: How to Build Teams That Lead, Innovate and Succeed*** Cambridge, MA: HBS Press.

Ancona, D. G., Goodman, P. S., Lawrence, B. S., & Tushman, M. L. 2001. Time: A New Research Lens. ***Academy of Management Review***, 26(4): 645-663.

Argote, L. 2009. Group and Organizational Learning: Current Themes and Future Directions, ***2009 Texas Conference***. Austin, TX.

Argote, L., & Miron-Spektor, E. In press. Organizational Learning: From Experience to Knowledge. ***Organization Science***.

Argote, L., & Todorova, G. 2007. Organizational Learning. ***Internationnal Review of Industrial and Organizational Psychology***, 22: 193-234.

Bailey, C. D. 1989. Forgetting and the Learning Curve: A Laboratory Study. ***Management Science***, 35(3): 340-352.

Benner, M., & Tushman, M. 2003. Exploitation, exploration, and process management: The productivity dilemma revisited. ***The Academy of Management Review***, 28(2): 238-256.

Blau, P. M. 1977. ***Inequality and Heterogeneity***. NY: Free Press.

Bluedorn, A. C. 2002. ***The Human Organization of Time: Temporal Realities and Experience***. Palo Alto, CA: Stanford University Press.

Boh, W., Ren, Y., Kiesler, S., & Bussjaeger, R. 2007. Expertise and collaboration in the geographically dispersed organization. ***Organization Science***, 18(4): 595.

Borgatti, S., Mehra, A., Brass, D., & Labianca, G. 2009. Network analysis in the social sciences. ***Science***, 323(5916): 892-895.

Brooks, F. P. 1995. ***The Mythical Man Month: Essays on Software Engineering***. Reading, MA: Prentice-Hall.

Bunderson, J. S., & Sutcliffe, K. M. 2003. Management team learning orientation and business unit performance. ***Journal of Applied Psychology***, 88(3): 552-560.

Bunderson, S., & Boumgarden, P. In Press. Structure and Learning in Self-Managed Teams: Why "Bureaucratic" Teams Can Be Better Learners. ***Organization Science***, Online in Advance of Publication(Issue Unassigned): 1-16.

Chudoba, K., & Watson-Manheim, M. B. 2007. Exploring the Virtual Work Environment: A Process Perspective. In A. J. Salazar, & S. Sawyer (Eds.), ***Handbook of Information Technology in Organizations and Electronic Markets***: 57-76. Singapore: World Scientific.

Cronin, M. A., & Weingart, L. R. 2007. Representational gaps, information processing and conflict in functionally diverse teams. ***Academy of Management Review***, 32(3): 761-773.

Cummings, J. N. 2004. Work Groups, Structural Diversity, and Knowledge Sharing in a Global Organization. ***Management Science***, 50(3): 352-364.

Cummings, J. N. 2007. Membership intensity and the performance of geographically dispersed teams. ***Working Paper***, Durham, NC: Duke University.

Dahlin, K., Weingart, L., & Hinds, P. 2005. Team diversity and information use. ***Academy of Management Journal***, 48(6): 1107-1123.

DeChurch, L. A., & Marks, M. A. 2006. Leadership in Multiteam Systems. ***Journal of Applied Psychology***, 91(2): 311-329.

DeMarco, T. 2002. ***Slack: Getting Past Burnout, Busywork, and the Myth of Total Efficiency***. NY: Broadway.

Edmondson, A. C., Dillon, J. R., & Roloff, K. S. 2007. Three Perspectives on Team Learning: Outcome Improvement, Task Mastery, and Group Process. ***Academy of Management Annals***: 269-314.

Evans, J. A., Kunda, G., & Barley, S. R. 2004. Beach Time, Bridge Time, and Billable Hours: The Temporal Structure of Technical Contracting. ***Administrative Science Quarterly***, 49(1): 1-38.

Fiol, C. M., Pratt, M. G., & O'Connor, E. J. 2009. Managing Intractable Identity Conflicts. ***Academy of Management Review***, 34(1): 32-55.

Foreman, P., & Whetten, D. A. 2002. Members' identification with multiple-identity organizations. ***Organization Science***, 13: 618-635.

Fuller, R., & Dennis, A. 2004. Does fit matter? The impact of fit on collaboration technology effectiveness over time, ***Proceedings of the 37th Annual Hawaii International Conference on System Sciences***: 1-10.

Gallagher, W. 2009. ***Rapt: Attention and the Focused Life***. New York: Penguin Press.

Giddens, A. 1984. ***The Constitution of Society: Outline of the Theory of Structuration***. Berkeley: University of California Press.

Gonzalez, V. M., & Mark, G. 2005. Managing currents of work: Multi-tasking among multiple collaborations, ***Proceedings of the 9th European Conference on Computer Supported Cooperative Work***: 143-162. NY: Springer-Verlag.

Grabher, G. 2002. Cool Projects, Boring Institutions: Temporary Collaboration in Social Context. ***Regional Studies***, 36(3): 205-214.

Haas, M. R. 2006. Knowledge Gathering, Team Capabilities, and Project Performance in Challenging Work Environments. ***Management Science***, 52(8): 1170-1184.

Hackman, J. R. 2002. ***Leading Teams: Setting the Stage for Great Performances***. Boston, MA: Harvard Business School Press.

Hackman, J. R., & Katz, N. 2010. Group Behavior and Performance. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), ***Handbook of Social Psychology***, 5th ed., Vol. 2: 1208-1251. New York: Wiley.

Hackman, J. R., Pearce, J. L., & Wolfe, J. C. 1978. Effects of Changes in Job Characteristics on Work Attitudes and Behaviors: A Naturally Occurring... ***Organizational Behavior & Human Performance***, 21(3): 289-304.

Hansen, M. T., & Haas, M. R. 2001. Competing for Attention in Knowledge Markets: Electronic Document Dissemination in a Management Consulting Company. ***Administrative Science Quarterly***, 46(1): 1-28.

Harrison, D. D., & Klein, K. J. 2007. What's the Difference? Diversity Constructs as Separation, Variety, or Disparity in Organizations. ***Academy of Management Review***, 32(4): 1199-1228.

Hecht, T. D., & Allen, N. J. 2005. Exploring links between polychronicity and well-being from the perspective of person-job fit: Does it matter if you prefer to do only one thing at a time? ***Organizational Behavior & Human Decision Processes***, 98(2): 155-178.

Heimerl, C., & Kolisch, R. 2010. Work assignment to and qualification of multi-skilled human resources under knowledge depreciation and company skill level targets. ***International Journal of Production Research***, 28(13): 3759 – 3781.

Hillman, A. J., Nicholson, G., & Shropshire, C. 2008. Directors' Multiple Identities, Identification, and Board Monitoring and Resource Provision. ***Organization Science***, 19(3): 441-456.

Hinsz, V. B., Tindale, R. S., & Vollrath, D. A. 1997. The emerging conceptualization of groups as information processors. ***Psychological Bulletin***, 121: 43-64.

Hogg, M. A., & Terry, D. J. 2000. Social identity and self-categorization processes in organizational contexts. ***Academy of Management Review***, 25(1): 121-140.

Hopp, W. J., & Van Oyen, M. P. 2004. Agile workforce evaluation: A framework for cross-training and coordination. ***IIE Transactions***, 36: 919-940.

Hudson, J., Christensen, J., Kellogg, W., & Erickson, T. 2002. "I'd be overwhelmed, but it's just one more thing to do": Availability and Interruption in Research Management, ***Proceedings of the ACM Conference on Human Factors in Computing Systems CHI***: 97-104: ACM New York, NY, USA.

Huey, B. M., & Wickens, C. D. (Eds.). 1993. ***Workload Transition: Implications for Individual and Team Performance***. Washington, DC: National Academy Press.

Jackson, M. 2009. ***Distracted: The Erosion of Attention and the Coming Dark Age***. New York: Prometheus Books.

Jalote, P., Palit, A., Kurien, P., & Peethamber, V. T. 2004. Timeboxing: a process model for iterative software development. ***Journal of Systems & Software***, 70(1/2): 117-128.

Jett, Q. R., & George, J. M. 2003. Work interrupted: A closer look at the role of interruptions in organizational life. ***Academy of Management Review***, 28: 494-507.

Johns, G. 2006. The Essential Impact of Context on Organizational Behavior. ***Academy of Management Review***, 31(2): 386-408.

Johnson, M., Morgeson, F., Ilgen, D., Meyer, C., & Lloyd, J. 2006. Multiple professional identities: Examining differences in identification across work-related targets. ***Journal of Applied Psychology***, 91(2): 498-506.

Joshi, A., Pandey, N., & Han, G. 2008. Bracketing team boundary spanning: An examination of task-based, team-level, and contextual antecedents. ***Journal of Organizational Behavior***, Online in Advance, http://dx.doi.org/10.1002/job.567: n/a.

Karau, S. J., & Kelly, J. R. 1992. The effects of time scarcity and time abundance on group performance quality and interaction process. ***Journal of Experimental Social Psychology***, 28: 542-571.

Kc, D., & Terwiesch, C. 2009. Impact of Workload on Service Time and Patient Safety: An Econometric Analysis of Hospital Operations. ***Management Science***, 55(9): 1486-1498.

Kelly, J. R., & McGrath, J. E. 1985. Effects of time limits and task types on task performance and interaction of four-person groups. ***Journal of Personality and Social Psychology***, 49(2): 395-407.

Kenis, P., & Knoke, D. 2002. How organizational field networks shape interorganizational tie-formation rates. ***Academy of Management Review***, 27(2): 275-293.

Klein, K. J., & Kozlowski, S. W. J. (Eds.). 2000. ***Multilevel Theory, Research, and Methods in Organizations: Foundations, Extensions, and New Directions***. San Francisco: Jossey-Bass.

LePine, J., Podsakoff, N., & LePine, M. 2005. A meta-analytic test of the challenge stressor-hindrance stressor framework: An explanation for inconsistent relationships among stressors and performance. ***Academy of Management Journal***, 48(5): 764-775.

Leroy, S. 2009. Why is it so hard to do my work? The challenge of attention residue when switching between work tasks. ***Organizational Behavavior Human Decision Processes***, 109: 168-181.

Lewis, K., Lange, D., & Gillis, L. 2005. Transactive memory systems, learning, and learning transfer. ***Organization Science***, 16: 581-598.

Lojeski, K., Reilly, R., & Dominick, P. 2007. Multitasking and Innovation in Virtual Teams, ***Proceedings of the 40th Hawaii International Conference on System Sciences***, Vol. 40: 1-9.

Loukopoulos, L., Dismukes, K., & Barshi, I. 2009. ***The multitasking myth: Handling complexity in real-world operations***: Ashgate Pub Co.

March, J. G., & Simon, H. A. 1958. ***Organizations***. New York,: Wiley.

Mark, G., Gonzalez, V. M., & Harris, J. 2005. No task left behind?: examining the nature of fragmented work, ***Proceedings of the SIGCHI conference on Human factors in computing systems***: 321-330. Portland, OR.

Mark, G., Gudith, D., & Klocke, U. 2008. The cost of interrupted work: more speed and stress, ***Proceeding of the twenty-sixth annual SIGCHI conference on Human factors in computing systems***. Florence, Italy: ACM.

Marks, M. A., Dechurch, L. A., Mathieu, J. E., Panzer, F. J., & Alonso, A. 2005. Teamwork in Multiteam Systems. ***Journal of Applied Psychology***, 90(5): 964-971.

Martin, A., & Bal, V. 2006. ***The State of Teams***. Greensboro, NC: Center for Creative Leadership.

Massey, A. P., Montoya-Weiss, M. M., & Hung, Y. T. 2003. Because time matters: Temporal coordination in global virtual project teams. ***Journal of Management Information Systems***, 19: 129-155.

Mathieu, J., Maynard, M. T., Rapp, T., & Gilson, L. 2008. Team Effectiveness 1997-2007: A Review of Recent Advancements and a Glimpse Into the Future. ***Journal of Management***, 34(3): 410-476.

McGrath, J. E. 1991. Time, Interaction, and Performance (TIP): A Theory of Groups. ***Small Group Research***, 22(2): 147-174.

Meyer, M., Olsen, T., & Torsvik, G. 1996. Limited intertemporal commitment and job design. ***Journal of Economic Behavior & Organization***, 31(3): 401-417.

Milgrom, P. R., & Roberts, J. 1992. ***Economics, Organization, and Management***. Englewood Cliffs, N.J.: Prentice-Hall.

Novick, L. 1988. Analogical transfer, problem similarity, and expertise. ***Journal of Experimental Psychology: Learning, Memory, and Cognition***, 14(3): 510-520.

Ocasio, W. 1997. Towards an attention-based view of the firm. ***Strategic Management Journal***, 18: 187-206.

Ortega, J. 2001. Job Rotation as a Learning Mechanism. ***Management Science***, 47(10): 1361-1370.
Payne, S. J., Duggan, G. B., & Neth, H. 2007. Discretionary Task Interleaving: Heuristics for Time Allocation in Cognitive Foraging. ***Journal of Experimental Psychology: General***, 136(3): 370-388.
Perlow, L. A. 1999. The time famine: Toward a sociology of work time. ***Administrative Science Quarterly***, 44(1): 57-81.
Postrel, S. 2009. Multitasking teams with variable complementarity: Challenges for capablility management. ***Academy of Management Review***, 34(2).
Reagans, R., & Zuckerman, E. 2001. Networks, diversity, and productivity: The social capital of corporate R&D teams. ***Organization Science***: 502-517.
Reeves, L., & Weisberg, R. 1994. The role of content and abstract information in analogical transfer. ***Psychological Bulletin***, 115(3): 381-400.
Reinsch, N. L., Turner, J. W., & Tinsley, C. H. 2008. Multicommunicating: A Practice Whose Time Has Come? ***Academy of Management Review***, 33(2): 391-403.
Rosen, C. 2008. The Myth of Multitasking. ***The New Atlantis: A Journal of Technology and Society***, 20: 105-110.
Rothbard, N. P., Phillips, K. W., & Dumas, T. L. 2005. Managing Multiple Roles: Work-Family Policies and Individuals' Desires for Segmentation. ***Organization Science***, 16(3): 243-258.
Rubinstein, J. S., Meyer, D. E., & Evans, J. E. 2001. Executive Control of Cognitive Processes in Task Switching. ***Journal of Experimental Psychology: Human Perception and Performance***, 27(4): 763-797.
Ruff, F. 2006. Corporate foresight: integrating the future business environment into innovation and strategy. ***International Journal of Technology Management***, 34(3): 278-295.
Schilling, M. A., Vidal, P., Ployhart, R. E., & Marangoni, A. 2003. Learning by Doing Something Else: Variation, Relatedness, and the Learning Curve. ***Management Science***, 49(1): 39-56.
Schmidt, A. M., & Dolis, C. M. 2009. Something's Got to Give: The Effects of Dual-Goal Difficulty, Goal Progress, and Expectancies on Resource Allocation. ***Journal of Applied Psychology***, 94(3): 678-691.
Schmidt, A. M., Dolis, C. M., & Tolli, A. P. 2009. A Matter of Time: Individual Differences, Contextual Dynamics, and Goal Progress Effects on Multiple-Goal Self-Regulation. ***Journal of Applied Psychology***, 94(3): 692-709.
Shank, J. 2007. Life on the Bench, July 24, 2007, ***Accenture Consulting Analysts Blog***.
Singer, S. J., & Edmondson, A. C. 2008. When learning and performance are at odds: Confronting the tension. In P. Kumar, & P. Ramsey (Eds.), ***Performance and Learning Matters***: 33-60. Singapore: World Scientific Publishing.
Slomp, J., & Molleman, E. 2002. Cross-training policies and team performance. ***International Journal of Production Research***, 40: 1193-1219.
Sluss, D. M., & Ashforth, B. E. 2007. Relational identity and identification: Defining ourselves through work relationships. ***Academy of Management Review***, 32(1): 9-32.
Spink, A., Cole, C., & Waller, M. 2008. Multitasking Behavior. ***Annual Review of Information Science and Technology***, 42(1): 93-118.
Staats, B. R., Gino, F., & Pisano, G. P. 2010. Varied Experience, Team Familiarity, and Learning: The Mediating Role of Psychological Safety. ***HBS Working Paper 10-016***.
Steiner, I. D. 1972. ***Group Process and Productivity***. New York: Academic Press.
Subramaniam, M., & Youndt, M. 2005. The influence of intellectual capital on the types of innovative capabilities. ***Academy of Management Journal***, 48(3): 450-463.

Svenson, O., & Maule, A. J. (Eds.). 1993. ***Time pressure and stress in human judgment and decision making***. NY: Springer.

Tajfel, H. 1981. ***Human Groups and Social Categories: Studies in Social Psychology***. New York: Cambridge University Press.

Teachman, J. D. 1980. Analysis of Population Diversity. ***Sociological Methods and Research***, 8: 341-362.

Thatcher, S. M. B., & Zhu, X. 2006. Changing Identities in a Changing Workplace: Identification, Identity Enactment, Self-Verification, and Telecommuting. ***Academy of Management Review***, 31(4): 1076-1088.

Thompson, L. L. 2008. ***Making the Team*** (3rd ed.). NY: Prentice Hall.

Tobis, M., & Tobis, I. 2002. ***Managing Multiple Projects***. NY: McGraw-Hill.

Van der Vegt, G. S., Bunderson, S., & Kuipers, B. In press. Why Turnover Matters in Self-Managing Work Teams: Learning, Social Integration, and Task Flexibility. ***Journal of Management***, Online in Advance of Publication(Issue not yet assigned): 1-23.

Waller, M. 1997. Keeping the pins in the air: How work groups juggle multiple tasks. ***Advances in interdisciplinary studies of work teams***, 4: 217-247.

Waller, M. J., Conte, J. M., Gibson, C. A., & Carpenter, M. A. 2001. The effect of individual perceptions of deadlines on team performance. ***Academy of Management Review***, 26(4): 586-600.

Waller, M. J., Zellmer-Bruhn, M. E., & Giambatista, R. C. 2002. Watching the clock: Group pacing behavior under dynamic deadlines. ***Academy of Management Journal***, 45(5): 1046-1055.

Westenholz, A. 2006. Identity, Times and Work. ***Time Society***, 15(1): 33-55.

Wheelwright, S. C., & Clark, K. B. 1992. ***Revolutionizing product development: quantum leaps in speed, efficiency, and quality***. New York: Free Press.

Wiersma, E. 2007. Conditions That Shape the Learning Curve: Factors That Increase the Ability and Opportunity to Learn. ***Management Science***, 53(12): 1903-1915.

Wilson, J. M., Goodman, P. S., & Cronin, M. A. 2007. Group Learning. ***Academy of Management Review***, 37(4): 1041-1059.

Wittenbaum, G. M., Vaughan, S. I., & Stasser, G. 1998. Coordination in Task-Performing Groups. In R. S. Tindale, L. Heath, J. Edwards, E. J. Posavac, F. B. Bryant, Y. Suarez-Balcazar, E. Henderson-King, & J. Myers (Eds.), ***Theory and research on small groups***: 177-205. New York: Plenum Press.

Wong, S. 2008. Task knowledge overlap and knowledge variety: the role of advice network structures and impact on group effectiveness. ***Journal of Organizational Behavior***, 29(5): 591-614.

Yakura, E. 2001. Billables: The Valorization of Time in Consulting. ***American Behavioral Scientist***, 44(7): 1076-1095.

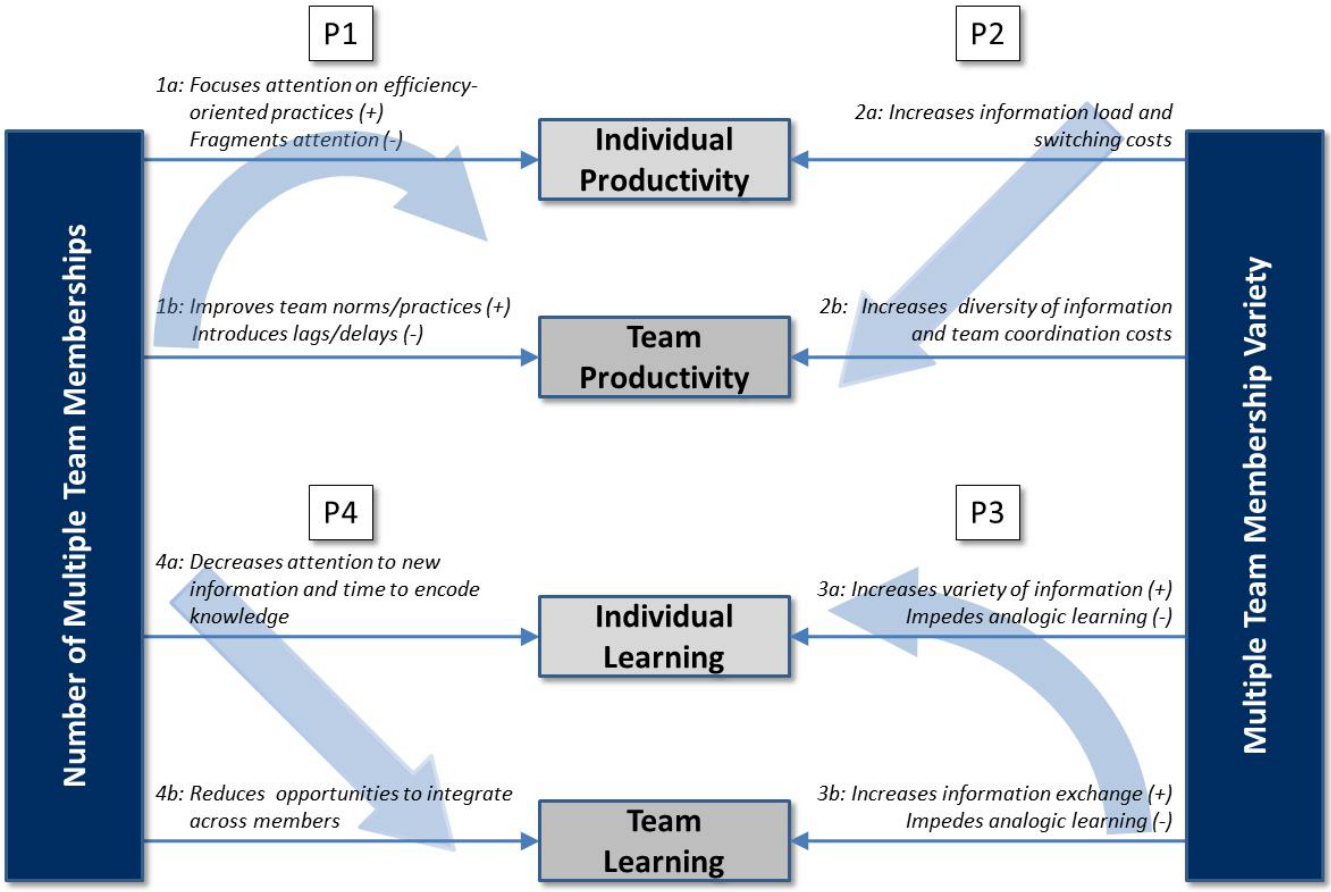
Zaheer, A., & Soda, G. 2009. Network evolution: the origins of structural holes. ***Administrative Science Quarterly***, 54(1): 1-31.

Zellmer-Bruhn, M. E. 2003. Interruptive Events and Team Knowledge Acquisition. ***Management Science***, 49(4): 514-528.

Zhong, C., Dijksterhuis, A., & Galinsky, A. 2008. The merits of unconscious thought in creativity. ***Psychological Science***, 19(9): 912-918.

Zika-Viktorsson, A., Sundstrom, P., & Engwall, M. 2006. Project overload: An exploratory study of work and management in multi-project settings. ***International Journal of Project Management***, 24(5): 385-394.

Figure 1: Relationships between Multiple Team Membership Variety and Number and Productivity and Learning at the Individual and Team Levels



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