Small Group Research
43(1) 3–29

DOI: 10.1177/1046496411425250
http://sgr.sagepub.com

Time to Re-Group: A Typology and Nested Phase Model for Action Teams

Andrew W. Ishak[1]
and Dawna I. Ballard[1]

Abstract

Action teams are unique among group types in that their work is focused on time-constrained performance events that cannot be redone later. This aspect of their team temporality gives rise to an emphasis on simulation—a technique used by teams to replicate the taskwork, coordination, and communication of real-life events—and adaptation—in which teams use "time-outs" to give members a chance to regroup and communicate. In the present article, we attempt to offer more precision in research and theorizing across diverse team types through first offering a typology of action teams that considers the work of critical, contending, and performing teams. This typology informs the nested phase model introduced next, which accounts for the unique temporality of teams that place a heavy emphasis on performance and the related issues of cyclicity, finality, and epochality that characterize their work. Testable propositions intended to guide future research are offered.

Keywords

action teams, phase model, process, simulations, time

[1]University of Texas at Austin, TX, USA

Corresponding Author:
Andrew W. Ishak, University of Texas at Austin, 1 University Station A1105, Austin, TX 78712, USA
Email: ishak@utexas.edu

Organizations are constructed of multiple teams with differing functions. Among these functions, some teams are designed to manage, some are involved in production, and other teams provide services for certain constituents. All teams have a unique relationship to time that shapes and is shaped by their interactions (Arrow, Poole, Henry, Wheelan, & Moreland, 2004; Ballard, Tschan, & Waller, 2008; McGrath, 1991). This is particularly true for action teams, such as fire crews, military units, and musical ensembles. While most teams must contend with time constraints (highlighted by Gersick's, 1988, classic work on punctuated equilibrium and Okhuysen and Waller's, 2002, analysis of the associated boundary conditions), and teams' tasks are often cyclical in nature (underscored in Marks, Mathieu, and Zaccaro's, 2001, typology and framework of team process), action teams must use skill and knowledge in cyclical time-constrained periods during which they also face finality of action associated with epochal events. A fire crew, as one example, has to make split-second decisions to avoid further destruction as well as deaths. This gives rise to a relationship to time that centers on two understudied aspects of team task phases: simulation and adaptation, or taking time to pause and regroup as a means of successful task accomplishment. While speed is more commonly valued and studied in contemporary organizational settings (Gleick, 1999; King & Cushman, 1994)—and speed is, indeed, a critical marker of success with regard to many key outcomes (including deadlines, time to market, among others)—we propose that examining simulation activities as well as the use and meaning of pauses, or time-outs, that are hallmarks of action teams is critical to a full apprehension of team taskwork and process across settings.

In their review of applied group research, Nielsen, Sundstrom, and Halfhill (2005) note that action teams account for only 2 of 53 articles written between 1999 and 2004. Given that action teams make up important components of the military, medical, public defense, and entertainment sectors (among others), it follows that more attention should be paid to these types of teams. Concomitantly, over the last few decades there has been a call for more research on temporal processes of teams and groups (Ballard et al., 2008; Marks et al., 2001). Kozlowski and Bell (2003) acknowledge that time is largely ignored in work team research, claiming that team effectiveness cannot be understood without paying attention to process. Zaheer, Albert, and Zaheer (1999) also make an appeal for research on the influence of temporal intervals on organizational processes.

Our objective is to address these dual needs, with the aim of advancing both areas of scholarship—regarding action teams and team temporality—through introduction of a typology and nested phase model of action teams.

The typology groups similar teams from across diverse fields, which may help those in the workplace better understand the fit of their own team to those in other sectors (Katz, 2001). It then helps inform the related model, which is designed to account for the unique temporality of teams that places a heavy emphasis on performance events.

To accomplish these goals, we draw from and extend Okhuysen and Waller's (2002) work on time pacing as a semistructure (to address relevant taskwork issues for action teams) and Marks and colleagues' (2001) temporally based framework (to identify relevant team process issues). In the following pages, we introduce a typology of action teams by first defining their parameters and differentiating them across several dimensions. Next, we briefly distinguish between taskwork and team process for action teams. This distinction is critical because of the roles that taskwork and process play during different points in the life cycle of an action team. Then, we introduce and develop the nested phase model, a framework that captures action teams' incorporation of unique communicative and temporal issues into their processes. We also introduce propositions that capture the distinctions of the nested phase model. We summarize by discussing possible critiques of the nested phase model and future directions for research on communication and temporality of action teams.

A Typology of Action Teams: Contending, Performing, and Critical

Sundstrom (1999) categorizes six types of teams: production, service, management, project, action/performing, and parallel. Action/performing teams are defined as those that conduct "complex, time-limited engagements with audiences, adversaries, or challenging environments in 'performance events' for which teams maintain specialized, collective skill" (p. 20). Some examples include surgical units, wildland fire crews, negotiation teams, sports teams, and cockpit crews.

Importantly, previous work (Marks et al., 2001; Sundstrom, 1999) has not explicitly differentiated between action and performing teams; both types have been defined collectively as teams with specialized, collective skill that work to complete tasks within time constraints. Some scholars initially refer to the action/performing category but use the shortened label of "action teams" (Sundstrom, 1999), suggesting that the term has an unclear history. Indeed, Sundstrom recounts that he and Altman (1989) struggled with what to call the category that eventually became action teams (E. Sundstrom, personal communication, April 27, 2010). Other scholars use the action teams

label exclusively, only mentioning performing teams when referencing earlier work (Marks et al., 2001).

Rather than being an issue of terminology only, this lack of clarity points to an opportunity to consider important differences and similarities across the diverse team types that are labeled as action or performing (or both) as well as the related theoretical implications. Differences among various types of action and performance teams are implicit in Sundstrom's (1999) explanation: "Teams in the category of action and performance conduct complex, time-limited engagements with audiences, adversaries, or challenging environments in 'performance events'" (p. 20). In addition, Sundstrom, DeMeuse, and Futrell (1990) note that action teams require coordinated improvisation in response to unpredictable behavior. We believe this to be true for some, but not all, action teams. For example, with the exception of improvised jazz, most music ensembles probably face no more unpredictable circumstances than any other type of team. Given these varied dimensions along which teams can differ, our typology below considers action teams as the broader category and performing teams as one of three types of action teams that vary across five dimensions—task goals, evaluation of success, expectations of improvisation, team task/performance focus, and the timing of performance events (see Figure 1). Considering these dimensions helps to offer more precision in our research and theorizing across diverse team types.

First, the team task goals can differ—some strive for perfection in performances (i.e., engagements with audiences) while others mainly contend with competition (i.e., engagements with adversaries). Second, the evaluation standards of team success vary along three interrelated subdimensions: Evaluations can be subjective and/or objective, delivered in binary or spectral terms, and judged by internal and/or external evaluators. Teams that perform are often evaluated subjectively by judges and/or audiences, while teams that contend are generally evaluated objectively by a final tally. Some evaluations are binary (i.e., win/lose) while others are spectral (i.e., better and worse performances). As well, the team can serve as its own judge of success or there may be an external evaluator that serves this purpose. Thus, this collection of team types can be subcategorized by evaluation of success—with varied considerations of the standards by which success is defined.

Third, team members' expectations of improvisation vary significantly across team types. Improvisation may be an intrinsic aspect of the task due to a dynamic adversary; it may sometimes be needed depending on the unfolding of events, or it should be unnecessary based on the planned nature of the event. Fourth, there are important differences in the task/performance focus of the team, with some teams taking a decidedly inward stance focused on

	Action Team Type		
	Contending	**Critical**	**Performing**
Examples	Professional sports teams, political campaign teams, some legal teams	Fire crews, surgical units, military teams, bomb squads, S.W.A.T. units	Choirs, orchestras, theater troupes
Task goal	Dynamic competition against adversary	Dynamic competition coupled with predetermined performance	Predetermined performance in front of an audience
Timing of performance events	Planned	Generally unplanned	Planned
Team focus	Inward (team performance) and outward (performance of adversary)	Inward (team performance) and outward (performance of adversary)	Inward (team performance)
Evaluation of success	Evaluated using a binary set (e.g., win/loss) by an external, objective application of rules	Evaluated on a spectrum and using a binary set (both can be either subjective or objective, external or internal)	Evaluated subjectively on a spectrum by external judges (e.g., mediators, audiences)
Expectations of improvisation	Necessary component due to a dynamic adversary	Necessary at times due to dynamic adversary	Should be unnecessary since performance should follow predetermined plans

Figure 1. A typology of action teams

team performance and others maintaining equal attention outwardly toward their adversary. This is relevant because a team's focus determines the content of their practices as well as actions and topics of communication during engagements. Finally, the timing of performance events can be planned or unplanned during production phases.

Contending teams. The contending team faces a task environment that requires improvisation in the face of unpredictability and measures success against an adversary. An example of the first type is a professional basketball team. They face an adversary that is unpredictable (their opponent), which requires them to value improvisation and flexibility. It also requires them to focus not only on their own actions but those of their adversary as well. Contending teams measure their success relative to their competition, counting victories and defeats. Success is measured in a binary fashion by an (ostensibly) objective interpretation of rules by a third party; a basketball team achieves their goal if the official final score shows that they have more points than the other team. The issue of perfection is relevant to a contending team but only as a subgoal to a competitive end. Success is not open for

interpretation to contending teams; they win or lose, and there is only middle ground if the objective rules of their performance context allow for ties with their adversary.

Performing teams. The performing team faces a task environment that requires members to coordinate their interdependent actions in front of audiences during performance events, and measures success by a standard of perfection. An example of a performing team is an orchestra; they engage in performance events in front of audiences and/or judges and do not expect to improvise during events. Performing teams measure their success on a spectrum that has perfection at one extreme. Here we use a definition from the Oxford English Dictionary of perfection: "flawlessness" or "the condition, state, or quality of being free from defect." These teams strive to be flawless during performance events. An orchestra or a choir can be perfectly successful if they perform their arrangements exactly as planned, but they can also have differing levels of success depending on how closely their performance approaches perfection: the closer to zero flaws, the better and so on. In other words, success is relative. For performing teams, there is a middle ground between complete success and complete failure. Unlike the performance context of contending teams, performing teams are evaluated subjectively by a judge or audience. The issue of direct competition with an adversary generally has less meaning for them; subsequently, performing teams maintain a strong inward focus.

Critical teams. The last type of action team can be distinguished by its dual focus on competition and perfection. Fire crews, military units, and surgical teams all compete on some level with an adversary. In some cases, the adversary is clear: fire crews fight a blaze and military units battle an opposing force. In other cases, the adversary is simply something that causes a problem, or an antagonist. In the case of surgical teams, they often *compete* against a medical malady: a cancerous tumor, a bursting appendix, or a punctured lung. The goal in those cases is to remove or fix the malady. We call this team critical because most units that have characteristics of both contending and performing teams operate in life-or-death situations. This term comes from Cannon-Bowers and colleagues (2001):

> Critical performance in many complex systems depends on the coordinated activity of a team of individuals. Cockpit crews, surgery teams, fire fighting teams, and military teams are all examples of teams who operate in situations where ineffective performance can have disastrous consequences. (p. 221)

These examples highlight multiple ways in which critical teams are like contending teams—they share similar task goals (i.e., compete against some sort of adversary), anticipate the need for improvisation, and focus on a binary measure of success (e.g., winning or losing a battle). One important difference is who is doing the evaluating. While contending teams compete against an adversary in front of an official who makes interpretations, critical teams often do not have officials. Fire crews must make their own evaluations to determine if a blaze has been extinguished, and military units might only assess a battle as a victory when their adversary has disappeared. As well, the evaluation of success for critical teams is not as clear as it is for contending or performing teams. Teams in this third group are like performing teams in that success is measured subjectively on a spectrum of perfection in addition to using a more objective and binary measurement. Fire crews and military units work to minimize casualties and damage in addition to the goal of beating a blaze or winning a military battle. Surgical teams operate not only to fix a punctured lung but also to cause as little damage to the body as possible; in other words, each additional flaw affects the success of performance events.

Critical teams have received more attention from group scholars than other types of action teams—an appropriate fact given the high-stakes nature of their work. In addition, organizational scholars have studied critical teams in the form of high-reliability organizations, or HROs (Perrow, 1984; Roberts, 1990; Weick, 1990). HROs work in environments that can produce errors on the catastrophic level (e.g., nuclear power plants and naval aircraft carriers) but have succeeded due to multiple factors. Weick and Sutcliffe (2001) mark extreme interdependence, preoccupation with failure, and the reluctance to simplify complexities as three of the most important factors in creating an HRO. HRO research is of relevance to group scholars because some entities can be classified as both teams and organizations, such as wildfire crews (Weick, 1993). Thus, critical teams should be studied from both group and organizational perspectives to maximize our understanding of such critical components of our society. Having defined and offered examples of the types of teamwork of interest, next we introduce the nested phase model as an approach to better understand the taskwork and group process experienced by action teams. Specifically, we begin by distinguishing between taskwork and group process in action teams and describe how time pacing acts as a semistructure (Okhuysen & Waller, 2002) linking the two. While previous research (Poole, 1981; Tuckman, 1965) has focused more on the communicative phases of group work, studying action teams calls for a dual focus on communication and taskwork. The importance of this dual focus is elaborated below.

Taskwork Versus Process for Action Teams

Taskwork is what teams must accomplish, and process represents how those tasks are accomplished. To understand the difference between taskwork and team process in action teams, as well as their interrelatedness, imagine the activities of a basketball team. Taskwork includes activities such as dribbling the ball safely down the court, making shot attempts, and playing defense. Members accomplish some of these tasks individually and others collectively. For example, making a foul shot occurs exclusively on the individual level, while running an offensive play that includes multiple members is an interdependent task. The actions that explicitly lead to goal accomplishment, such as shooting and passing, are defined as taskwork. Meanwhile, process is defined by Marks and colleagues (2001) as the sum of interdependent activities that direct taskwork to achieve collective goals, including acts that are cognitive, verbal, and behavioral. Because of its interdependent nature, we argue that team process is inherently communicative. Some examples of process include in-game hand signals, halftime speeches, and conversations during timeouts. Team process manages taskwork, but they do not necessarily occur at mutually exclusive moments in time; in fact, they often occur simultaneously.

The relationship between process and taskwork is symbiotic for action teams. Process guides taskwork, which informs the need for process (Marks et al., 2001). This makes teamwork and process inextricable for some teams. For teams with a high level of experience, process is not just explicit conversation among members; it also includes mutual understanding of particular team aspects that are developed by long standing familiarity. An example of this would be the way in which the teammates on a basketball court (described above) know where to move with respect to each other when the ball is passed around; external members may not understand the meanings associated with their actions, yet the players are informing others through their taskwork (e.g., moving to the right place on the court). This type of teamwork falls somewhere between explicit communication and taskwork; in other words, members can communicate with each other by engaging in taskwork.

In addition, a great deal of communication occurs when the game clock is stopped and taskwork is halted. Okhuysen and Waller (2002) introduce the concept of time pacing as a semistructure that enables group members to pause within the flow of work to “stop and think” (p. 1056). This notion draws from Brown and Eisenhardt’s (1997) research on semistructures that provide group members with flexibility in organizing their work. Okhuysen and Waller (2002) define temporal pacing as “the use of time as a metric and

a punctuation device to evaluate and motivate the work of groups" (p. 1056). While they investigated the extent to which time pacing operated as a semistructure within a punctuated equilibrium model of task progress, we believe that important aspects of the construct apply to the taskwork of action teams as well. Specifically, during the adaptation phase, action teams pause to regroup and consider the next best course of action. This serves as a device to both evaluate their performance and motivate them to utilize the remaining time effectively. Notably, the opportunity to utilize these pauses to interrupt the flow of taskwork is explicitly maintained by action teams as a semistructure. Okhuysen and Waller (2002) distinguish between their interests in time pacing as a marker of group development versus time pacing as a marker of task progress, focusing on the latter. Similarly, we are interested here in the relationship between taskwork and communication—also labeled as "team process"—for action teams. The model described below accounts for the manner in which communication occurs when taskwork is paused.

Phase Models of Action Teams

We introduce the Nested Phase Model to account for the unique temporality of action teams. It is based on two concepts: the recurring phase model introduced by Marks and colleagues (2001), and nested time scales, based on the work of van Orden and Holden (2002). Specifically, we build on the concept of transition and action phases—introduced by Marks and colleagues—by nesting one cycle of transition and action within another to create four phases, two of which are particularly well suited to capture the unique attributes of action teams. First, we describe how action teams are different from others in this regard. Next, we describe the recurring phase model and define action and transition phases. Finally, we elaborate the parameters of the nested phase model. Testable propositions are offered throughout.

Recurring Phase Model

As described in the preceding section, action teams are not accounted for in many group typologies. As well (and perhaps connected to their exclusion from some typologies), they are also understudied. Probably, the most similar category to action teams from extant typologies is the project team (Cohen & Bailey, 1997). Similar to action teams, project teams are defined as time limited and focused on tasks that involve a considerable amount of judgment and expertise. Both of these characteristics apply to action teams.

Still, there are important differences—notably, action teams experience work cyclically, with finality, and more epochally than project teams.

In terms of the cyclicity of their taskwork, action teams generally have processes that cycle more than once from transition to action phases; project teams have only one cycle throughout the length of their process (Mankin, Cohen, & Bikson, 1996). For example, a project team of engineers may be brought together for a project, complete their project, and then disband afterwards. In general, action teams have a shared history and expectations of a shared future.

Another distinct characteristic of action teams is in the finality of their work. Teams such as surgical crews and military units cannot redo their work at a later time. In other words, deaths on an operating table or battlefield are irreversible. Even action teams with lighter consequences must deal with finality. A string quartet that makes a mistake during a performance has made that mistake indelibly—they cannot remove it from their performance history. On the other hand, imagine a team of intellectual property lawyers who need to correct an error on a patent. While there may be some time pressures (e.g., a competing team trying to file a similar patent), they are still allowed to rewrite the patent. In addition, the lawyers can start the writing process earlier than anyone else, providing time to revise first drafts. They are not bound by starting and ending time constraints as strictly as are action teams.

It can be argued that finality is a dimension of the work of all groups, not just action teams. This is certainly true in the long term. However, the finality of action teams' work is linked to the epochality of their tasks (Ballard et al., 2008; Bluedorn, 2002). Specifically, the work time of most knowledge workers is generally fungible, meaning a minute of work now can be substituted for a minute of work later with little consequence (Bluedorn, 2002; McGrath & Rotchford, 1983). In contrast, action teams deal frequently in *epochal time,* which is composed of events (Whitehead, 1978). This is a consequence of the dramatic starting and finishing points of performances. The difference between fungible and epochal time can be roughly explained by comparing the work of accountants and firefighters. A team of three accountants may estimate that their work for the month of March will take around 900 hours total. They can choose to put in hours at any time as long as they finish. This is because time (and the resulting task accomplishment it affords) typically matters more than events for knowledge workers. In contrast, if a fire crew is tasked with putting out a blaze, they cannot choose to do it at a later time (even putting in the same number of person-hours) without major consequence. What matters is the event, not the time (in isolation from the event). Events like fires, oil spills, and heart attacks occur epochally because they are

not determined by a clock. Thus, action teams have a more complex relationship with finality and temporality than other teams.

Marks and colleagues' (2001) recurring phase model is applied to four types of teams: production, service, project, and action. Of the four types of teams to which the model is applied, action teams have the most constraining temporal framework due to the epochal and performative nature of their central task(s). Action teams are distinctive in that their success is defined by their ability to reach their goal in time-constrained activities—periods which Marks and colleagues (2001) would define as the action phases. For example, a professional basketball team is primarily evaluated on if it wins its games and/or championships; they are generally not evaluated on how qualified they look in practice or how hard they work during the offseason. Another example comes from medicine, where surgical teams base their success on operational triumph. The salient point is that the evaluation of success for action teams comes only from their actions in time-constrained performances, which then become the quintessential activities around which the rest of the schedule revolves. Ultimately, all other phases of an action team's life cycle are only relevant in how they serve the accomplishments in the performance phases, so teams structure their schedules and communicative practices to maximize success in performance events. For example, teams of astronauts engage in hours of simulations so that what occurs during the actual launch (i.e., the performance) is completed with minimal error. Production teams, service teams, and action teams do not engage their schedule in this way because their work generally does not revolve around performance events. Most group phase models are mainly designed to capture the characteristics of teams comprised of knowledge workers, and do not apply equally well to action teams such as fire crews, surgical teams, and military units. The model we propose in the next section characterizes action teams by accounting for these issues of cyclicity, finality, and epochality.

Marks and colleagues' recurring phase model divides team process into transition and action phases and explicitly includes cyclicity—one of the several aspects of their model that underscores the importance of considering temporality in team research. Action phases are "periods of time when teams are engaged in acts that contribute directly to goal accomplishment" (Marks et al., 2001, p. 360). For action teams, action phases occur in epochal time because the related goal accomplishment cannot occur at any other time—the action phase is the event itself and is unsubstitutable for another block of time. As well, because it occurs in event time, many actions teams cannot know how long it will take to complete this phase. Transition phases are "periods of time when teams focus primarily on evaluation and/or planning activities to

guide their accomplishment of a team goal or objective" (Marks et al., 2001, p. 360). Accordingly, the transition phase occurs in fungible time. This means that transition activities can be rescheduled or played out at various times since they are somewhat independent of the focal event. Similarly, transition phases are often easily scheduled and may adhere to specific times.

Other researchers support a cyclical model of group process. For example Kozlowski, Gully, Nason, and Smith (1999) argue that team tasks cycle in intensity. They also argue that cycles are useful in developing skills at different stages of development, and that team compilation is a "sequence of modal phases and transition points" (p. 250). In addition, most types of teams have to manage more than one process simultaneously (McGrath, 1991). The recurring phase model demonstrates possible temporal rhythms of team tasks, allowing for multiple temporal processes with disparate rhythms (i.e., fungible or epochal). In addition, multiple processes may have the same rhythm because one is nested within the other, an occurrence that is common for action teams. Few of the existing models of team process and temporality have accounted for the presence of nested time cycles that characterize most action teams.

It is important to account for nested time cycles because doing so can clarify discrepancies in perspective among team members. In the recurring phase model, the definition of what constitutes an action phase may vary from person to person. For example, one player on a football team may only consider each burst of strenuous movement on the field to be a unique action phase, while another member may consider the entirety of a game—even resting and strategy modification—to be contributing directly to goal accomplishment. Such discrepancies arise because of differences in perspective, which can affect a person or group's view of phenomena (Ballard, 2009; Monge & Kalman, 1996; VanLear, 1996; Zaheer et al., 1999). In actuality, both players can be correct in their assessment of what constitutes an action phase, and we can account for both perspectives by nesting one cycle length within another. Rousseau (1985) allows space for cross-level influences in organizational research, which could include nesting in time scales. In addition, the literature on entrainment speaks to cross-timescale influence (Ancona & Chong, 1996; Ballard, 2009). Below, we introduce a nested phase model that accounts for these aspects of action teams.

Nested Phase Model

The value of nested time-cycles to our phase model can be explained with a question, "How long is now?" Now can be as short as the split-second it takes to read the word "now." It can also be as long as the current geological epoch, the Holocene era, which started 12,000 years ago (although most

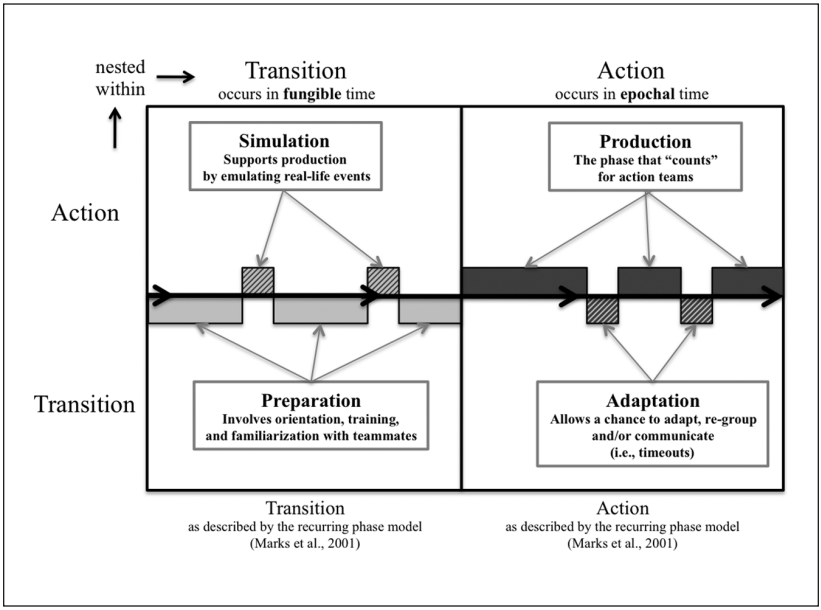

Figure 2. Sample process of the nested phase model for action teams

orchestras and sports teams have not been together this long). The concept of nested timescales accepts that both time windows—as well as some in between—can be concomitantly viewed as now. Van Orden and Holden (2002) argue that the cognitive work of an individual occurs at multiple scales—that is, we naturally think about both shorter nows and longer nows. In addition, nested timescales at different levels are coupled and synergistic, with the strength of the coupling correlated with how close the scales are (i.e., minute-to-second is more closely coupled than decade-to-second). The meaning of an activity that takes place at one moment must be considered within the context of other timescales (Streeck & Jordan, 2009). This contextualization of activities is necessary within the structure of teamwork and the nested phase model.

The nested phase model we introduce here builds on the action/transition setup of the recurring phase model through contextualizing action and transition phases within larger periods of action and transition (see Figure 2). For example, a transition activity (e.g., relaying a play call to a teammate) may occur within a larger period of action (e.g., a football season). However, it might instead be contextualized within a much shorter period of transition

(running from the sideline to the huddle). Therefore, nesting of action/transition periods potentially creates an infinite amount of phase types. A quarterback who is receiving a play from his coach (action) in between plays (transition) at a crucial moment in a game (action) that does not have an effect on the final standings (transition) but is during the season (action) is in one phase type; his teammate who is waiting to hear the play is in another. While consideration of infinite phase types is intriguing and complex to some scholars, it is likely to be unwieldy and counterproductive to incremental understanding of group communication and temporality. Thus, the nested phase model introduced here displays a single nesting of dichotomous time periods to create four distinct phases:

- Preparation—transition within a larger transition phase
- Simulation—action within a larger transition phase
- Production—action within a larger action phase
- Adaptation—transition within a larger action phase

This (rather simple) level of nesting allows for close examination of two important phases that have been understudied in group research: simulation and adaptation. First, simulation is a crucial component of an action team's life cycle because they must familiarize themselves with the (potentially high-risk) activities for which they are brought together. Second, adaptation offers team members a chance to regroup, or redirect their efforts by communicating with one another. Both of these phases are crucial to action teams because of their unique temporality (i.e., finality and epochality). Figure 2 demonstrates how these phases, simulation and adaptation, combine with two others—preparation and production, respectively–to make up the life cycle of an action team. These phases and their interrelationships are described below.

Simulation. Simulation occurs when an activity associated with production is practiced during a transitional phase. It is a technique used to replicate aspects of the "real" world in an interactive manner (Gaba, 2004). It is not real action, as the outcome of simulation is only relevant to the extent that it affects later events (a true action phase is one in which the outcome directly affects goal accomplishment). However, the importance of this phase should not be overlooked, as simulations are used to reduce uncertainty. First, members of the team become familiarized with likely scenarios as well as with their teammates. Aggarwal, Undre, Moorthy, Vincent, and Darzi (2004) detail the benefits of a simulated operating theatre for surgical teams, with the main advantage being that simulation allows surgeons to familiarize themselves with external influences such as distractions and crisis situations. Second, previously unknown scenarios are brought to light by playing

out events with different inputs. For example, a surgical unit may repeat a simulation that they have already completed, except this time they "accidentally" cut an artery. Everyone within the unit may be comfortable with the presented situation given their previous experiences. However, some members may experience unfamiliarity, or a sense of "I have never been here before," also known as *vu jàdé* (Weick, 1993). While *vu jàdé* is generally considered an unwelcome feeling, experiencing it during training can serve to minimize (or even eliminate) these feelings in a high-risk situation. The expectation is that simulations will surface and correct issues associated with unfamiliarity in a low-risk environment. This includes full simulations (e.g., five-on-five practice basketball games) and partial simulations (e.g., players lining up to make layup shots).

Simulation is necessary because there is no redo for what occurs during performance events, many of which have human lives at stake. The finality of team efforts is unforgiving, which results in a work culture that demands error-free performances for all types of action teams. However, certain aspects of simulations will differ depending on team type. Contending teams will incorporate awareness of improvisation into their simulations because their performance events involve adjustments to the unpredictability of their adversary's performance. Therefore, contending teams approach simulations as a way to become familiar with a variety of possible scenarios. Performing teams, on the other hand, limit their flexibility during practice. Instead of privileging elements of improvisation, performance teams focus on repetition of known patterns. They have little need for familiarity with unknown scenarios.

Proposition 1: Teams use simulation as a means of enhancing performance during the production phase because of the epochality and finality of performance events.

Proposition 2: Performing teams engage in repetitive, highly structured simulations while critical and contending teams encourage flexibility to act and react due to their anticipation of improvisation.

Preparation. During the preparation phase of our nested phase model, team members focus on activities that will help guide them toward their goal. This phase is similar to the transition phase of the recurring phase model (Marks et al., 2001); we label it preparation with regard to action teams because activities completed during this phase are preliminary measures that serve to make members—and the team as a whole—ready for future actions. For example, a professional basketball team spends a good deal of time working on their understanding of the sport—watching game film, listening to their

coaches, and working on plans for future games. Many of the activities in this phase involve synchronizing multiple members of the team onto the same trajectory, which often occurs through communication about outcomes, goals, and process. The preparation phase also contains activities that indirectly relate to goal attainment. Using the example of a basketball team, this would include actions such as lifting weights, running, eating well, physical therapy, and getting the proper amount of rest. In addition, due to the finality of events for action teams, feedback that occurs immediately after the end of the last performance event is considered preparation for the next phase.

The construction and flexibility of a team's preparation phases depend on their knowledge of when the next performance event will begin. Teams with highly scheduled performance events, such as sports teams, are able to structure their preparation periods down to the minute with the expectation that the shift to production will occur at a set point in their future. Such teams often arrange their schedules backwards from those set points. For example, many professional soccer teams have their players eat their last meal four hours before the start of a match. Then the remaining time is usually highly scheduled in a countdown format to kickoff. Most teams in the contending and performing quadrants will make similar provisions to maximize the potential for success during the production phase. However, most critical teams are not afforded this luxury because performance events are often thrust upon them. Imagine a surgical team who must perform an emergency surgery on a patient who has had a heart attack. While the team has likely put in many hours of preparation and simulation, they may not have the time to engage in preperformance preparation efforts (e.g., a thorough review of the patient's medical history and associated risks). Thus, most critical teams must be flexible enough during the preparation phase to start a production phase quickly. These teams often come together without previous experience as well. Using the example of flight attendants who must band together in an emergency, McKinney, Barker, Davis, and Smith (2005) refer to newly formed action teams as swift-starting and argue that they benefit from developing a capacity to learn new interactions during crisis events. This is more precisely defined as a metacapacity by McKinney and colleagues (2005, p. 219), who demonstrate that the ability to learn new interactions during events, routine or nonroutine, is derived from team culture and their training environment.

Developing a metacapacity includes the ability to learn new interactions during crisis situations as well as routine settings. This is especially crucial for critical teams. While performing and contending teams have predetermined event schedules, critical teams generally cannot predict the timing of their

performance events. Imagine a bomb squad that uses a rotating shift schedule. They do not know when their next performance event (i.e., production phase) will take place, and they can only make assumptions about certain variables. For example, they may not be able to use certain radio frequencies or channels depending on the trigger connected to the explosive device. Therefore, they do not have the luxury of assuming which resources will be available to them and when they will be available. Ideally, developing a metacapacity for communication reflects two expectations in members: (a) they will have the capacity to engage in new interactions, and (b) they will be ready to develop new styles, methods, and patterns of interaction. Therefore, members are not only highly practiced in multiple scenarios but are also ready to act, interact, and communicate in unforeseen ways. We argue that metacapacity for on-the-fly learning can be developed in members through the separate and combined impact of simulation and preparation activities, as summarized in the following propositions:

Proposition 3: Due to the generally planned nature of their events, preparation phases of contending and performing teams are more highly scheduled than those of critical teams.

Proposition 4: It is beneficial for action teams to develop a metacapacity for on-the-fly learning of new actions and interactions.

Adaptation. By definition, a team interacts adaptively toward a common goal (Salas, Dickinson, Converse, & Tannenbaum, 1992). This phase of our model demarcates when team members stop or slow their work to communicate with one another, and is defined as when production is paused, voluntarily or involuntarily. Generally, teams use adaptation to realign members onto a previously determined trajectory or to discuss coordination onto a new path. The most practical example of adaptation comes from the field of sports. Teams call timeouts during which players convene mid-game to discuss strategy and evaluate their plan and options. Communication patterns and the ability to "stop the clock" during adaptation phases depend on (a) the organizational structure, if any, that enables and constrains team activities and (b) the inherent temporality of their environment. First, communication during a timeout depends on organizational structure. It is likely to be top-down for hierarchical groups such as fire crews, sports teams, and military units. On the other hand, there may be more two-way discussion among teams interested in gathering information from the field, such as search-and-rescue teams.

Second, the time constraints of the environment will determine whether work is stopped or slowed down. Calling a timeout in sports pauses the event, meaning the rules of the game cease to govern the proceedings (Coleman, 1969). Time can be stopped for most teams with a human adversary; some team sports allow for timeouts, many legal systems have recesses, and militaries can agree to ceasefires. Conversely, there are teams that do not have the luxury of stopping the clock. Time does not stop for teams that have a natural adversary, such as a fire or a heart attack. For example, if a fire captain wants to discuss strategy with his crew, he has two options: (a) communicate and fight the fire concomitantly, or (b) stop fighting the fire to talk. The former option can be difficult for multiple reasons, including logistics and the drawbacks of multitasking on information retention. Therefore, the fire captain may choose to pause the physical fight against the fire even though he knows the fire will not reciprocate. Here we draw on and extend the work of Okhuysen and Waller (2002) on time pacing as a semistructure.

Brown and Eisenhardt (1997) describe a semistructure as one that has partial order and lies between the extremes of very rigid and highly chaotic. As described earlier, Okhuysen and Waller (2002) apply the concept to temporal pacing. They argue that the mere presence of temporal pacing can cause group members to interrupt their work and evaluate their progress. By doing so, the group can "consider alternative paths and determine the direction their group should follow in the subsequent work period" (Okhuysen & Waller, 2002, p. 1057). In other words, the group is afforded a chance to adapt to their situation when they take a voluntary timeout because they can exchange information more efficiently. Thus, whether it is "on the clock" (e.g., for fire crews) or if it acts as a pause (e.g., for legal teams), taking time to communicate can be beneficial even if it delays response.

For action teams, especially, this adaptation phase—i.e., when members use time pacing as a semistructure—is most useful if a team predetermines certain aspects of the work process but is also flexible enough to recognize when those prescriptions should be abandoned. In the same way that developing a metacapacity for learning new interactions on-the-fly can be helpful, semistructures allow team members to implement what has been learned. Thus, while Brown and Eisenhardt originally introduced the concept to understand organizational change, its fundamental principle also applies to the adaptability of action teams:

> Although speculative, our underlying argument is that change readily occurs because semistructures are sufficiently rigid so that change can be organized to happen, but not so rigid that it cannot occur. Too little

> structure makes it difficult to coordinate change. Too much structure makes it hard to move. (Brown & Eisenhardt, 1997, p. 29)

We argue that semistructures play two roles in the processes of action teams. First, flexible pacing offers teams a chance to adapt at crucial moments. A team that takes a timeout can communicate in ways that other teams cannot. Second, using Brown and Eisenhardt's (1997) classic definition of the term, the team itself should be a semistructure. Teams may discuss their adaptation plan during a timeout, but an overly rigid or flexible structure may hinder their ability to implement it. For example, a team may decide to run Play X without having simulated it, and they may fail in their implementation. Conversely, a team must institute some structure outside of performance events because timeouts often involve activation of plans established during simulation and preparation. Essentially, teams must strike the right balance between preparedness and improvisation (Kreps, 1991). This leads to the following propositions:

Proposition 5: Action teams use the adaptation phase in order to communicate about aligning team efforts within a new or previously determined plan.

Proposition 6: Stopping production to communicate with teammates can be beneficial even to teams that are under severe time pressures.

Production. In Marks and colleagues' (2001) model, evaluation of team success is only based on what occurs during the action period. Similarly, success for most team members is chiefly measured in terms of the outcome of one part of Marks and colleagues' action periods: what we term the production phase. In the production phase, teams use their expertise and skill in activities that lead directly to goal attainment, and they combine elements of taskwork (physical and mental skill) and process (teamwork and communication) to achieve their goals. The three preceding phases—simulation, coordination, and adaptation—are used to support the efforts that occur during production. Some production activities happen infrequently. For example, astronauts preparing to go into orbit may only get one chance in their lifetime. Conversely, some production activities occur with regularity, such as fighting fires and outpatient surgeries. Teams that are brought together to perform these activities spend a good percentage of their time in production and less in the other three phases. Some surgical units may only run a simulation once a year, in part because a good percentage of their time is spent on actual surgery and other activities that involve patient interaction. Therefore,

a good deal of learning accrues during the production phase. This is not to say that medical professionals are experimenting during surgery. However, it does mean that the processes and outputs of a production phase become critical inputs for the next one because, otherwise, there may not be enough practice inputs from simulation and preparation.

The main reason that action teams are largely evaluated on performance during the production phase is because the events during this phase have much higher consequences than those in other phases. For example, a bomb squad's mistake during an action incident can be fatal, while a mistake during a simulated disarming is disappointing (but not catastrophic). The production phase is also highly scrutinized because external parties are more aware of its outcomes compared to other phases: games, performances, and incidents are more likely to be observed by the public than practices, rehearsals, and training, respectively.

While it is true that some teams may be evaluated more on process than product during this phase (e.g., "They didn't save his life, but they did everything they could."), process is still viewed as the *means* toward a potentially successful production phase. For example, when a sports columnist states that she is pleased with the efforts of the local team despite their loss to another team, the underlying assumption is that the team (and its fans) still hold winning games as the ultimate goal. Therefore, even when a team is evaluated more on process than outcome (such as the case of a losing team that was viewed to have worked hard or a surgical team that "did everything they could"), success in the production phase is a hallmark of the team's performance.

The idea that action teams are evaluated mainly on their performances during the production phase holds true for all three team types, especially contending and performing teams. Contending teams are evaluated by wins and losses, which are accrued during this phase. Imagine a professional basketball team that performs very well in practice but poorly during their games; it would not be considered a successful team by any standard, especially by fans and the local sports media. Fundamentally, performing teams are evaluated by the quality of their performances. Consider an orchestra that makes many mistakes during rehearsals but pulls it together and plays in perfect harmony during the actual performance; the art critics in the audience would write their review based on the performance itself, not the rehearsal. While evaluation of critical teams may be slightly more process-focused, all action teams are still largely evaluated on their ability to succeed in the production phase.

Notably, we differentiate production from phases of adaptation in which team members take a "timeout" from action to communicate and strategize. While the distinction can sometimes be blurry in practice, one way to categorize an activity as production—as opposed to adaptation—is to examine whether the majority of team members' expertise is needed to perform it. For example, athletes are hired by professional sports teams for their physical and mental expertise during gameplay. They try to score goals, engage in defensive tactics, and generally outplay the opposition. When a team takes a timeout to discuss coordination, the majority of team members' key skill sets are put to rest. Therefore, we elevate production above other phases as the most crucial period of action teams' process, leading to our final three propositions:

Proposition 7: Teams combine elements of taskwork and process during a production phase to achieve their goals.

Proposition 8: External evaluations of an action team's success are chiefly based on their performance during production phases, as opposed to their performances during the other three phases.

Proposition 9: Teams with a higher frequency of production phases are more likely to cite previous production phases as learning opportunities than teams with less frequent production phases.

Summary

There are particular distinctions that make research on action teams both theoretically and practically important. First, action teams have unique time-related issues. Many action teams spend time simulating the activities they will have to perform at a later date. They do so because of the finality of their performance events; there is no chance to redo their work at a later date. Due to these differences, most research on other groups is not easily generalized to account for the ways that action teams perform their duties. Second, the temporal distinctions of action teams force members to adapt their communication patterns and actions in brief windows of time. Action teams take timeouts during performance events to adapt to their adversaries and environment. This is such a hallmark of their group process that they often develop their own language of short phrases and terms to signify elaborate concepts more efficiently (Kanki & Smith, 2001). To this point, time pressures for commercial flight crews have created a variety of "distinct, sophisticated, and recognizable interaction" (McKinney et al., 2005, p. 215). For example, pilots use an interaction referred to as challenge and response to

ensure compliance with procedure in which a captain will inquire about a flight variable (e.g., "flaps") and the first officer will respond accordingly ("flaps 50%"). Third, research on action teams has practical importance because these teams often perform duties that are intended to limit human deaths. One of the goals of most critical teams—including fire crews, surgical units, emergency medical teams, and search-and-rescue teams—is to limit physical injury and death. Of lesser importance—but equal applicability—is the intention to limit material damage, which is relevant to spill containment teams, military units, and fire crews, especially those that fight wildfires. Yet, despite their importance, action teams are barely accounted for in applied group research (Nielsen et al., 2005). Many types of action teams perform duties that are crucial to human development and sustainment; they should receive more focus from group scholars.

We have introduced a typology of action teams to better understand team types. We have split action teams into three subgroups with somewhat permeable borders: contending, performing, and critical teams. Contending and performing teams are separate from one another in multiple ways. Contending teams are attempting to beat an adversary, and success is measured within a binary structure; error minimization only matters to the extent that doing so helps the team win. They focus on their own performance as well as that of their adversary and assume that improvisation will play a part in their production phases. In contrast, the success of performing teams is measured along a spectrum, and they are evaluated by themselves, judges, and/or audiences. Like contending teams, timing of their performance events is planned but they do not assume improvisation to be part of their process. Critical teams are unique in that they work in life-and-death environments and timing of their events is generally unplanned. In addition, they combine elements of contending and performing teams within their processes. In the same way that overarching team types have differences in structure and communication patterns, so do subgroups within the category of action teams. A typology of action teams can make comparisons among team types more accurate in research and in practice.

Note that while we have laid out team types with seemingly rigid adherences to particular evaluation bases, the team types we present reflect the prioritized–but not the only–focus for those teams in most settings. In addition, a given team might occasionally enact the role of a different type of team. For example, a dance team generally strives for perfection in its performances, but in front of judges it may adjust components of its performance to prioritize competition (e.g., after another team falters, choosing a simpler routine with a lower base score that would generate a smaller deviation of

possible scores). Conversely, a contending team may prioritize its own performance over the binary outcome of winning/losing. Imagine a basketball team that has already clinched a spot in playoffs. The coach and players may care more about working on particular plays and keeping players healthy than if they win the game. In this example, a contending team promotes an inward focus, deprioritizing the outward focus (i.e., actions of their adversary) that is a standard of contending teams. They are also primarily measuring success on a spectrum (e.g., how healthy the players are) as opposed to a binary. In essence, a contending team can enact a performing team and vice versa. Based on future empirical work, the extent to which these enactments are common and the reasons for them can be explored to further refine the typology.

In addition to the typology, we have also introduced the nested phase model to illustrate the unique temporality of action teams, as well as propositions related to each phase. The model takes the transition/action dichotomy proposed by Marks and colleagues (2001) and nests it within itself, creating four distinct phases. The purpose of each phase in the model can be summarized with one distinguishing idea: only the production phase "counts." Preparation activities are designed to prepare the team for what happens during the production phase. Action teams use simulation because of the finality of performance events in the production phase. Adaptation phases offer the possibility of realigning the efforts of teams through communication in the midst of a production phase. In short, the purpose of preparation, simulation, and adaptation is to make production as successful as possible. The nested phase model accounts for this distinction in the work of action teams.

There are issues to consider in applications of the nested phased model. First, it is important to understand time scale when discussing any temporal framework. Zaheer and colleagues (1999) note that different-sized perspectives will offer different views on the same phenomena. Because of this, Ballard (2009) stresses the importance of choosing the right perspective when viewing any issue that has an element of temporality. As it relates to the nested phase model, the right-sized collection of episodes to view is not always clear. Using the example of an athletic team, the nested phase model can be used to view a game, a season, or a decade's worth of games.

Second, it is necessary to give attention to individual perspectives on transition and action. Members of a wildfire crew may consider time spent physically fighting a blaze to be action and moments spent away from the blaze to be transition. However, one of the most crucial aspects of a leader is how she communicates to her team. A fire captain is likely to consider those moments away from the blaze—when she has to direct and diagram strategies to

her crew—to be part of an action phase perhaps because of its inherent epochality. A baseball pitcher who only throws once every five games due to a rotation has a much different concept of action and transition than his teammate who plays every day. It is often taken for granted that teams are homogenous in their relationship to team process and production. However, a team is defined as a grouping of members with complementary skills. Thus, based on skill differentiation, it is reasonable that they will have unique views on the same process.

Third, while the idea of partial phases challenges the parceling attempted by the nested phase model, in practice sometimes the distinctions among phases will be blurred depending on the perspective taken. For example, most researchers would agree that basketball players playing a five-on-five practice game are in the simulation phase. However, if two players practice shooting three-pointers after the simulation, they are simulating an activity that they will have to perform during a production phase. Therefore, from one perspective it is simulation. Alternatively, from a different perspective they are in the preparation phase since they will never be on the court without eight other players during an actual game. As for the distinction between production and adaptation, there are moments when teams will be actively performing (the hallmark of production) and communicating (the hallmark of adaptation) at the same time. While we place this in the production phase, when a team voluntarily or nonvoluntarily stops its work to communicate, they are engaging in adaptation.

Finally, it is important that we do not ignore the ways in which team practice and midaction strategy sessions affect group communication patterns. This is especially true when considering teams that must use their skill and knowledge in time-constrained performance events. The temporality of an action team makes their communication patterns distinct from groups that have a different relationship with time. Because of the finality associated with their work, action teams interact in unique ways with their schedule and each other, and previous communication models may not fully apply to them. Action teams are understudied in group research, probably due to the sensitivity of their work environments and outcomes (i.e., access to surgical groups, military units, and SWAT teams can be difficult). However, this is precisely why more attention should be paid to action teams and their processes: effective interaction during all phases is essential to their performance when it counts.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

Aggarwal, R., Undre, S., Moorthy, K., Vincent, C., & Darzi, A. (2004). The simulated operating theatre: Comprehensive training for surgical teams. *Quality & Safety in Health Care, 13*, 127-132.

Ancona, D., & Chong, C. L. (1996). Entrainment: Pace, cycle, and rhythm in organizational behavior. *Research in Organizational Behavior, 18*, 251-284.

Arrow, H., Poole, M. S., Henry, K. B., Wheelan, S., & Moreland, R. (2004). Time, change, and development: The temporal perspective on groups. *Small Group Research, 35*, 73-105. doi:10.1177/1046496403259757

Ballard, D. I. (2009). Organizational temporality over time: Activity cycles as sources of entrainment. In R. Roe, M. J. Waller, & S. Clegg (Eds.), *Time in organizational research* (pp. 204-219). London, UK: Routledge.

Ballard, D. I., Tschan, F., & Waller, M. J. (2008). All in the timing: Considering time at multiple stages of group research. *Small Group Research, 39*, 328-351. doi:10.1177/1046496408317036

Bluedorn, A. C. (2002). *The human organization of time: Temporal realities and experience.* Palo Alto, CA: Stanford University Press.

Brown, S. L., & Eisenhardt, K. M. (1997). The art of continuous change: Linking complexity theory and time-paced evolution in relentlessly shifting organizations. *Administrative Science Quarterly, 42*, 1-34. doi:10.2307/2393807

Cannon-Bowers, J. A., Salas, E., & Converse, S. (2001). Shared mental models in expert team decision-making. *Environmental Effects of Cognitive Abilities*, 221-245.

Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management, 23*, 239-290. doi:10.1177/014920639702300303

Coleman, J. S. (1969). Games as vehicles for social theory. *American Behavioral Scientist, 12*(6), 2-6. doi:10.1177/000276426901200602

Gaba, D. M. (2004). The future vision of simulation in health care. *Quality and Safety in Health Care, 13*, i2-i10. doi:10.1136/qshc.2004.009878

Gersick, C. J. G. (1988). Time and transition in work teams: Towards a new model of group development. *Academy of Management Journal, 31*(1), 9-41. doi:10.2307/256496

Gleick, J. (1999). *Faster: The acceleration of just about everything*. New York, NY: Pantheon Books.

Kanki, B. G., & Smith, G. M. (2001). Training aviation communication skills. In E. Salas, C. A. Bowers, & E. Edens (Eds.), *Improving teamwork in organizations:*

Applications of Resource Management Training (pp. 95-127). Mahwah, NJ: Lawrence Erlbaum.

Katz, N. (2001). Sports teams as a model for workplace teams: Lessons and liabilities. *Academy of Management Executive, 16*(3), 56-67. doi: 10.5465/AME.2001.5229533

King, S. S., & Cushman, D. P. (1994). *High-speed management and organizational communication in the 1990s: A reader*. Albany: State University of New York Press.

Kozlowski, S. W. J., & Bell, B. S. (2003). Work groups and teams in organizations. In I. B. Weiner, D. K. Freedheim, W. F. Velicer, J. A. Schinka & R. M. Lerner (Eds.), *Handbook of psychology* (pp. 333-375). New York, NY: John Wiley.

Kozlowski, S. W. J., Gully, S. M., Nason, E. R., & Smith, E. M. (1999). Developing adaptive teams: A theory of compilation and performance across levels and time. In D. R. Ilgen & E. D. Pulakos (Eds.), *The changing nature of work performance: Implications for staffing, personnel actions, and development* (pp. 240-292). San Francisco, CA: Jossey-Bass.

Kreps, G. A. (1991). Organizing for emergency management. In T. E. Drabek & G. J. Hoetmer (Eds.), *Emergency management: Principles and practice for local governments* (pp. 30-54). Washington, DC: International City Management Association.

Mankin, D., Cohen, S. G., & Bikson, T. K. (1996). *Teams and technology: Fulfilling the promise of the new organization*. Boston, MA: Harvard Business School Press.

Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *Academy of Management Review, 26*, 356-376.

McGrath, J. E. (1991). Time, interaction, and performance (TIP): A theory of groups. *Small Group Research, 22*, 147-174. doi:10.1177/1046496491222001

McGrath, J. E., & Rotchford, N. L. (1983). Time and behavior in organizations. *Research in Organizational Behavior, 5*, 57-101.

Monge, P. R., & Kalman, M. (1996). Sequentiality, simultaneity, and synchronicity in human communication. In J. Watt & A. Van Lear (Eds.), *Cycles and dynamic patterns in communication processes* (pp. 71-92). New York, NY: Ablex.

Nielsen, T. M., Sundstrom, E. D., & Halfhill, T. R. (2005). Group dynamics and effectiveness: Five years of applied research. In S. A. Wheelan (Ed.), *The handbook of group research and practice* (pp. 285-312). Thousand Oaks, CA: SAGE.

Okhuysen, G. A., & Waller, M. J. (2002). Focusing on midpoint transitions: An analysis of boundary conditions. *Academy of Management Journal, 45*, 1056-1065. doi:10.2307/3069330

Perrow, C. (1984). *Normal accidents: Living with high-risk technologies*. New York, NY: Basic Books.

Poole, M. S. (1981). Decision development in small groups I: A comparison of two models. *Communication Monographs, 48*(1), 1-24. doi:10.1080/03637758109376044

Roberts, K. H. (1990). Some characteristics of one type of high reliability organization. *Organization Science, 1*, 160-176. doi:10.1287/orsc.1.2.160

Rousseau, D. M. (1985). Issues of level in organizational research: Multi-level and cross-level perspectives. *Research in Organizational Behavior, 7*(1), 1-37.

Salas, E., Dickinson, T. L., Converse, S. A., & Tannenbaum, S. I. (1992). Toward an understanding of team performance and training. In R. W. Swezey & E. Salas (Eds.), *Teams: Their training and performance* (pp. 3-29). Norwood, NJ: Ablex.

Streeck, J., & Jordan, J. S. (2009). Communication as a dynamical self-sustaining system: The importance of time-scales and nested context. *Communication Theory, 19*, 445-464. doi:10.1111/j.1468-2885.2009.01351.x

Sundstrom, E. (1999). The challenges of supporting work team effectiveness. In E. Sundstrom (Ed.), *Supporting work team effectiveness: Best management practices for fostering high performance* (pp. 3-23). San Francisco, CA: Jossey-Bass.

Sundstrom, E., & Altman, I. (1989). Physical environments and work-group effectiveness. *Research in Organizational Behavior, 11*, 175-209.

Sundstrom, E., DeMeuse, K., & Futrell, D. (1990). Work teams: Applications and effectiveness. *American Psychologist, 45*(2), 120-133. doi:10.1037//0003-066X.45.2.120

Tuckman, B. W. (1965). Developmental sequence in small groups. *Psychological Bulletin, 63*, 384-399. doi:10.1037/h0022100

VanLear, C. A. (1996). Communication process approaches and models: Patterns, cycles, and dynamic coordination. In J. H. Watt & C. A. VanLear (Eds.), *Dynamic patterns in communication processes* (pp. 35-70). Thousand Oaks, CA: SAGE.

Van Orden, G. C., & Holden, J. G. (2002). Intentional contents and self-control. *Ecological Psychology, 14*, 87-109. doi:10.1207/S15326969ECO1401

Weick, K. E. (1990). The vulnerable system: An analysis of the Tenerife air disaster. *Journal of Management, 16*, 571-593. doi:10.1177/014920639001600304

Weick, K. E. (1993). The collapse of sensemaking in organizations: The Mann Gulch disaster. *Administrative Science Quarterly, 38*, 628-652. doi:10.2307/2393339

Whitehead, A. N. (1978). *Process and reality: An essay in cosmology*. New York, NY: Free Press.

Zaheer, S., Albert, S., & Zaheer, A. (1999). Time scales and organizational theory. *Academy of Management Review, 24*, 725-741. doi:10.2307/259351

Bios

Andrew W. Ishak is a doctoral candidate in the Department of Communication Studies at the University of Texas at Austin, USA.

Dawna I. Ballard is an associate professor in the Department of Communication Studies at the University of Texas at Austin, USA.