A LEADERSHIP SYSTEM FOR EMERGENCY ACTION TEAMS:

RIGID HIERARCHY AND DYNAMIC FLEXIBILITY

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Abstract

Dominant models of leadership are united by their focus on the leader-follower dyadic relationship, their emphasis on the leader's role in enhancing follower motivation and commitment, and their common assumption of a long-term leader-follower relationship. In many contemporary organizations, these foci, emphases, and assumptions appear increasingly inapt. We conducted a qualitative investigation of the leadership of trauma resuscitation teams – action teams that present a microcosm of many of the challenges contemporary organizations face. Our findings reveal a complex system in which the active leadership role shifts among team leaders arrayed in a hierarchy of expertise and experience. Enabled by structured routines, established tradition and values, expert support staff, and individuals' awareness of the passage of time, the leadership system facilitates swift coordination, reliable performance, and development of the team's least experienced members. Our findings challenge assumptions within dominant models of leadership, suggest new directions for team leadership research and practice, and invite a new conceptualization of leadership as a system or structure – a characteristic not of individuals but of the organization or unit as a whole.

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The patient arrives by helicopter or ambulance at the Shock Trauma Center, one of the best and busiest trauma care centers in the world (Armstrong and Carpenter, 1995; Rosenwald, 2003). The victim of a shooting, stabbing, car crash, or some other traumatic blow to the body, the patient is transported to the Center's Trauma Resuscitation Unit (TRU) and is immediately surrounded by a team of doctors, nurses, and technicians. The team's task is to stabilize, diagnose, and treat the patient as quickly as possible. Errors or delays in this process may result in the death of the patient; quick and appropriate treatment is likely to save the patient's life. Several members of the team have never before worked together. Further, some of the doctors are relative novices. They are residents who joined the TRU days ago, seeking additional experience and training; they will leave the organization at the end of the month. Throughout the coming day and night, more patients will arrive, at unpredictable times, bearing unpredictable and uncertain injuries. And throughout the day and night, the team will change repeatedly in composition, as team members end their shifts of varying lengths and are replaced by other members of the TRU. In the months ahead, hundreds of trauma victims will enter the TRU. Scores of residents will cycle through. Evolving interdisciplinary teams of doctors, nurses, and technicians, often unfamiliar to one another, will provide treatment, repeatedly facing tasks necessitating swift coordination, reliable performance, adaptation, and learning.

How should such teams be led? Dominant theoretical models of leadership – such as transformational leadership theory and leader member exchange theory (e.g., Dansereau, Graen, and Haga, 1975; Bass, 1985; Graen and Uhl-Bien, 1995; Bass, 1998; Avolio, 1999; Schriesheim, Castro, and Cogliser, 1999) – offer relatively little guidance in this context. These models focus

primarily on universal leader traits and behaviors designed to enhance follower motivation and commitment. Further, these models highlight the dyadic relationship between a leader and a follower, devoting little attention to the role a leader may play in developing and guiding a team of interdependent individuals. Finally, the models rest, implicitly, on the assumption of long-term and ongoing leader-follower relationships and leadership effects. These models are thus of limited relevance to settings, like the TRU, in which immediate task performance is critical, the task is performed by a team, novice team members must be trained and developed, and the identity of the leader and the followers changes frequently.

And yet, the characteristics that distinguish the TRU teams are likely to become increasingly common in the years ahead. As numerous scholars have noted (e.g., Cascio, 2003), the contemporary workplace is evolving rapidly. Work organizations now rely increasingly on interdisciplinary action teams – "highly skilled specialist teams cooperating in brief performance events that require improvisation in unpredictable circumstances" (Sundstrom, De Meuse, and Futrell, 1990: 121). Further, the tempo of work is changing, becoming not only faster, but also more dynamic and unpredictable (Cascio, 2003). Organizational complexity is increasing as well, as contemporary work organizations experience tighter coupling of their units and functions, necessitating highly reliable team and organizational performance (Weick, Sutcliffe, and Obstfeld, 1999). Finally, the employee-employer relationship is weakening (e. g., Rousseau and Libuser, 1997; Hall and Moss, 1998; Cappelli, 1999). Given increasing employer turnover, long-term employee relationships cannot be assumed (Cappelli, 2000). The TRU teams described above thus present a microcosm of many of the dynamic challenges that contemporary organizations face.

To gain new theoretical insights regarding team leadership in highly dynamic settings, we conducted a qualitative field investigation of the leadership of TRU teams. The theoretical model emerging from our data highlights a paradoxical system of rigidly hierarchical, yet fluidly flexible team leadership in which the active leadership role shifts repeatedly and rapidly among the individuals who occupy key positions in the team. The rigid hierarchy underlying the leadership system facilitates team coordination and reliable performance in the short-term. The fluidity with which the active leadership role shifts among the occupants of key positions in the team facilitates learning and development, hence reliable long-term performance. This innovative leadership model challenges many elements of the dominant theories of leadership and both complements and extends the emerging functional approach to team leadership, described below. Further, our model suggests new directions for the conceptualization, study, and practice of team leadership. Below, we provide a brief overview of the functional approach to team leadership, before describing our research method, findings, and conceptual contributions.

Team Leadership: The Functional Approach

During the past two decades, teams and leadership have been the subjects of extensive theory and research (e.g., Bass, 1990; Yukl and Van Fleet, 1992; Guzzo and Dickson, 1996; Cohen and Bailey, 1997; House and Aditya, 1997; Kozlowski and Bell, 2003). However, team leadership per se has received scant attention, as numerous observers have lamented (e.g., Hackman and Walton, 1986; Stewart and Manz, 1995; Zaccaro, Rittman, and Marks, 2001; Bell and Kozlowski, 2002). Many reviews of the team effectiveness literature mention the topic of leadership in passing or not at all (e.g., Campion, Medsker, and Higgs, 1993; Guzzo and Dickson, 1996; Cohen and Bailey, 1997). Similarly, many reviews of the leadership literature

focus on the relationship between the leader and the individual subordinate, largely overlooking the impact of the larger team and organizational context on this relationship (e.g., Bass, 1990; Yukl and Van Fleet, 1992; House and Aditya, 1997).

In response, a small, but growing number of organizational scholars have turned their attention to the topic of team leadership. Empirical investigations of team leadership (e.g., Komaki, Desselles, and Bowman, 1989; Kane et al., 2002; Edmondson, 2003) remain rare, but conceptual work in this area is increasing. This literature on team leadership is distinguished from the larger and more established leadership literature by its explicit focus on the influence of the team leader on team processes, affect, development, task performance, and sustainability (Kozlowski et al., 2004). In describing the actions that a leader may take to influence the life and performance of a team, many authors (e.g., Hackman and Walton, 1986; Kozlowski et al., 1996; Zaccaro et al., 2001) draw on McGrath's (1962) functional leadership approach. The leader's "main job," McGrath (1962:5) suggested, "is to do, or get done, whatever is not being adequately handled for group needs." The functional leadership approach suggests that team leadership is situational; a team leader should do what the situation demands to ensure his or her team's effectiveness. Proponents of the functional team leadership approach thus caution that the approach cannot specify a prescriptive set of leadership behaviors that team leaders should universally enact (e.g., Hackman and Walton, 1986; Kozlowski et al., 1996; Zaccaro, Rittman, and Marks, 2001).

Our review of recent functional perspectives of team leadership does, however, suggest a set of five broad functions that are likely to warrant many team leaders' attention. These broad functions are presented in no single article or chapter, but instead seem to us to cut across the existing literature. In brief, the growing, if largely theoretical, literature on functional team

leadership (e.g., Hackman and Walton, 1986; Kozlowski et al., 1996; Zaccaro, Rittman, and Marks, 2001) suggests that effective leaders: (1) monitor the team's performance and environment to discern threats to the team's effectiveness; (2) structure and direct team members' activities, enhancing team member coordination and cooperation; (3) teach and train team members, developing their skills and knowledge; (4) motivate and inspire team members, fostering team members' commitment to task accomplishment; and (5) establish norms and routines that enable a positive and safe affective climate within the team. This list is, of course, not exhaustive. Moreover, the significance of each of the five functions may vary with the age of the team and the intensity of its tasks (Kozlowski et al., 1996; Hackman, 2002). Still, the list reveals the ways in which a functional approach may complement other, more established leadership models. Traditional models, we have noted, highlight the effect of leadership on follower motivation and commitment. But, this, the functional leadership approach suggests, is just one of several key functions of team leadership.

Many questions regarding team leadership in dynamic settings remain, however. Can there be more than one team leader and, if so, how might multiple team leaders share and distribute team leadership functions (e.g., Conger and Pearce, 2003)? Given unpredictable but urgent team tasks to be performed and novice team members in need of training, how can team leaders manage and balance the numerous functions they must fulfill? When team composition changes rapidly – such that team leaders and team members are often unfamiliar with one another – who fulfills the functions of team leadership and how?

To address complex leadership questions such as these, Conger (1998: 109-110) called for qualitative research, noting:

Most survey-generated leadership descriptors fail to help us understand the deeper

structures of leadership phenomena. We trade-off the "how" and "why" questions about

leadership for highly abstracted concepts and descriptions which allow us only to

generalize across a range of contexts at relatively superficial levels… The dynamic nature

of the leadership process also poses serious challenges for quantitative methods. …

Using qualitative research methods, we investigated the deeper structures of trauma resuscitation

team leadership, documenting and explicating a complex and integrated leadership system that

facilitates team members' swift coordination, reliable performance, and training of their

relatively novice members.

<div align="center">Method</div>

The Research Setting

The Shock Trauma Center (STC) is an urban Level-1 shock trauma center located in

Baltimore, Maryland. The Center admits over 7,000 patients each year. Patients treated at the

Center have sustained major injuries in car crashes (40%); intentional violence (e.g., gunshot or

stabbing wounds) (20%); industrial/agricultural/recreational accidents (20%); or falls (20%).

Each year, the Center trains more than 250 residents and fellows, making it a leading training

center for trauma care (Rosenwald, 2003). The Center's Trauma Resuscitation Unit (TRU) is the

primary point of patient entry to the Center. Within the TRU, the goal is to stabilize the patient

prior to his/her progression to surgery, to in-patient hospital care, or to his/her home. When a

patient arrives in the TRU, he or she is immediately seen by a team of specialists, typically

comprised of: (1) an attending surgeon (a faculty surgeon in the STC with the most trauma

surgery experience and expertise); (2) a surgical fellow (a physician who has recently completed

his/her residency and who has opted to pursue an additional year of training in the STC, during

which he/she spends three months supervising residents and medical students in the TRU); (3)

one or more surgical or emergency medical residents (physicians varying in experience who have completed medical school, but not their subsequent years of residency specialty training and who typically work and train in the TRU for a one to two month rotation); (4) an anesthesiologist; (5) a registered nurse; and (6) a trauma technician.

The composition of a TRU treatment team changes frequently as individual team members cycle on and off the team. Team members work shifts of differing lengths. Thus, the make-up of the team that assembles to treat one patient may differ from the make-up a team that assembles to treat a second patient one hour later; some individuals may have completed their shifts while others have just begun theirs. Further, the individuals assigned to perform several of the key roles within the team change from patient to patient. When a patient arrives, a resident (the "admitting resident") and a nurse (the "admitting nurse") are assigned to treat the patient. When a second patient arrives, a different resident and nurse are assigned to treat that patient.

Team composition shifts not only from patient to patient, but also from day to day, week to week, and month to month. Attending surgeons, fellows, residents, nurses, technicians, and specialists work schedules that vary from day to day; an attending, nurse, or technician who works in the TRU one day may not be scheduled to work in the unit again for several days. Further, team composition changes on a weekly and monthly basis as surgical fellows and residents complete their TRU rotations and others begin theirs. Given the frequency with which team composition changes, our primary unit of analysis is the team that assembles to treat a given patient. The lifetime of each team is thus quite brief (typically 15 to 60 minutes) – the time it takes to stabilize the patient.

Data Sources

Guided by recommended strategies for grounded theory development (Miles and Huberman, 1984; Eisenhardt, 1989), we collected multiple sources of data in two distinct phases, as described below.

Phase 1 data collection. During Phase 1, we conducted semi-structured individual interviews, ranging from 30 to 90 minutes, with 10 members of the TRU (e.g., two attending surgeons, three attending anesthesiologists, two residents, and three nurses). Because our goal was to gain a fundamental understanding of the setting, the TRU teams, and TRU team leadership, we asked broad, open-ended questions regarding these topics. Following common suggestions for qualitative research (e.g., Waldman et al., 1998), we assured interviewees that their responses were entirely confidential, asked for their informed consent prior to the interviews, and used neutral probes to invite interviewees to elaborate their answers. Interviews were audio taped and later transcribed verbatim.

Further, we spent over 150 hours observing the treatment of approximately 100 different patients in the TRU. During observation, we often spoke informally to TRU members, enhancing our understanding of medical procedures and of TRU norms and routines. While observing, we often wrote notes or spoke into a tape recorder to document leader behaviors, team member behaviors, or our own impressions. As observers (e.g., emergency medical technicians, police officers, visiting doctors and nurses) are common in the TRU, our presence did not appear to distract care-givers or arouse their self-consciousness.

At the conclusion of Phase 1 (ten months), we took a break in data collection to review our data and to develop a preliminary conceptual model of TRU team leadership. Our goal in Phase 2 (ten months) was to collect additional data that would aid us in refining and extending this model.

Phase 2 data sources. During Phase 2, we interviewed 23 TRU members (six attending surgeons, seven fellows, and ten residents). These interviews lasted between 45 and 90 minutes. We began by asking interviewees for background information (e.g., how long they had worked in the TRU). We then told them that we had conducted prior research in the TRU and were interested in knowing whether our preliminary conclusions "were on target." We gave interviewees a brief verbal overview of our conclusions from our Phase 1 research and showed them a one-page summary of our findings (a version of which appears in the appendix). We then explained to interviewees, "We want to know if we have this right. What do you think of this description of leadership in the TRU? Is there anything you would change or amend?" Approximately 40% of interviewees suggested that our conclusions were entirely accurate. For example, a fellow responded, "Yes, I think that's pretty much how I would sum it up.   I think you are exactly right…All the things that you summarized that leaders do are there on your list." The remaining respondents indicated that our Phase 1 conclusions were quite accurate, but suggested minor modifications and nuances. We then asked a series of questions designed to yield additional information regarding the processes of TRU team leadership and the factors that support and enable these processes. As in Phase 1, all interviews were audio taped and later transcribed verbatim.

We supplemented our interview data with archival data from or about the TRU and the Shock Trauma Center, additional observational data, and interview transcriptions from a related, but separate TRU study. For example, we reviewed the 184-page Resident Training Manual, which describes and explains TRU structure, norms, routines, and guidelines to residents. We observed orientation meetings conducted by attending surgeons, nurses, and other permanent staff members for fellows and residents. Further, we examined 32 interview transcriptions from

a study of TRU team coordination and communication. In this study, teams were videotaped

providing patient care. Subsequently, researchers showed the videotape to one or more members

of the treatment team and asked for their comments. Most comments focused on medical

procedures, however, some interviewees also noted behaviors of the team leaders.

Data Analyses

To analyze our data, we engaged in an iterative process, guided by principles of

qualitative analysis and grounded-theory development (e.g., Glaser and Strauss, 1967; Miles and

Huberman, 1984; Strauss and Corbin, 1990). At the conclusion of Phase 1, we reviewed our

interview transcripts, survey results, and observation notes, seeking to identify prominent themes

in the data. We met numerous times to discuss these themes, the relationships among the

themes, and issues to investigate in Phase 2. At the conclusion of Phase 2, we each

independently reviewed both the Phase 1 and Phase 2 data and again identified prominent themes

in the data. We then met to discuss the data and to reach a preliminary consensus regarding the

key themes to code. Next, we each coded several interviews, assigning a maximum of three

codes to each "thought unit" (paragraph or string of sentences regarding a focused topic) of the

interviews to indicate the key theme(s) that the thought unit addresses. We met to review our

coded interviews and identified codes that were redundant, too fine-grained, or too rarely

assigned to be useful, ultimately settling on a list of 70 codes.

In the next stage of data analyses, two of the authors coded every interview, assigning a

maximum of three codes to each thought unit. To reduce our original list of 1,430 thought units

to a more manageable number and to identify the most salient thought units, we sorted the

thought units by code and then read all of the thought units pertaining to each code. Next, the

three first authors independently rated the thought units for each code, assigning a score of one to

quotations we deemed exemplary – that is, particularly apt, insightful, and/or likely to generalize beyond the TRU. (We assigned a score of zero to thought units that did not meet this standard.) We then assembled the ratings of each thought-unit, and assessed the inter-rater reliability of our ratings. Results suggest acceptable levels of agreement for each of the themes. For example, for the theme of leader teaching, at least two of the three raters agreed in the importance rating of over 76% of the codes. We chose to include for further analysis 545 thought units coded as exemplary by at least two of first three authors. We then reviewed the quotations regarding each topic, noting linkages in the data (e.g., between the quotations regarding "leader monitoring of the team" and those regarding "patient condition") and identifying umbrella constructs (e.g., "enabling conditions") that helped to organize the data.

<center>The Team Leadership System</center>

When we began our qualitative investigation, our initial goal was to answer two basic questions: Who is the leader of the TRU team? And, what leadership functions does this individual fulfill? Interviewees' answers to the first question surprised and confused us. Based on traditional models of leadership, we assumed that there was a single, specified leader of each TRU team. We were wrong. Not only does leadership not reside in a single person, it does not reside in a single position. Rather, TRU team leadership resides in a hierarchy of three positions: the attending surgeon, the fellow, and the admitting resident. The individuals who occupy each of these positions may perform key leadership functions for the team. At any given moment, however, one individual is expected to fill the active leadership role. This role shifts frequently and fluidly among the three individuals who occupy the team's three key leadership positions. We begin our presentation of the TRU team leadership system, below, by describing and explicating these observations – the building blocks of our conceptual analysis.

As our investigation continued, new questions took center stage: How does the active leadership role shift from one position to another? When and why does it shift between positions? And, how and why does this leadership system not result in chaos, conflict, and error? We present the answers we discovered to these questions, describing in detail the mechanisms and consequences of the TRU's dynamic leadership system and commenting on the ways in which the leadership model that emerges from our analysis contradicts, complements, or extends traditional and functional leadership perspectives.

No Single Leader: Three Leadership Positions

When, during our Phase 1 interviews, we asked respondents who was the leader in a TRU team, we expected to receive a simple and straightforward answer to this seemingly simple and straightforward question. Instead, respondents' answers were varied and complex, as shown in Table 1. Some reported that there was one leader, but they differed in whom they designated as the one leader. Others reported that there were two leaders. Many mentioned three or more leaders:

> The attending surgeon is the leader and then the fellow should be next in charge. Every patient has an admitting resident. The resident's supposed to give orders – to tell other residents what to do. There's kind of a system of checks and balances among the residents, the fellow, and the attending. And the nurses speak up a lot. (N1)[1]

We concluded, as this Phase 1 interviewee suggested and Phase 2 interviewees subsequently verified, that the TRU invests leadership in three key positions: the attending, the fellow, and the admitting resident. This system of team leadership defies traditional models of leadership in which leadership is invested in a single individual, typically, or sometimes in a

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[1] Following each quotation in the text and tables, we show a code in parentheses to indicate the identity of the interviewee: A = Attending; F = Fellow; N = Nurse, R = Resident. The number following the letter indicates the specific individual respondent, for example R1 is one resident, R2 is a second resident, and so on.

single position (e.g., the manager on duty). Although some leadership scholars have begun to

suggest that leadership functions may be shared within teams (Avolio et al., 1996; Pearce and

Sims, 2002; Pearce and Conger, 2003), they have little addressed the number or identity of the

individuals in a team or unit likely to take on a leadership role.

For the trauma teams, the investment of leadership in three key positions presents several

benefits. First, the system accommodates frequent changes in team composition. Individual

leaders come and go, but the leadership positions remain. Second, the presence of three

leadership positions creates redundancy, enhancing the reliability of patient care. If one leader

lacks the knowledge to direct patient treatment, another is available. Finally, the system allows

relatively novice leaders – admitting residents – to assume a primary leadership role in a setting

that affords them, and their patients, protection and support.

Leadership Functions: What Leaders Do

In discussing what TRU leaders do, interviewees typically described four key functions,

as summarized in Table 1. Team leaders *provide strategic direction* by telling other team

members the overall plan or strategy for treating the patient, prioritizing possible interventions

(e.g., which injury to treat first), and revising the treatment plan as new information becomes

available (e.g., when a previously unknown internal injury is discovered). Second, team leaders

monitor the performance of the team by watching and sometimes questioning team members'

performance to ensure that the team makes no serious errors in treating the patient. Monitoring

may be close and quite active (e.g., the fellow stands just behind the admitting resident, asking

the resident questions such as "What do you want to do as far as x-rays are concerned?"). Or,

monitoring may be more distant and passive (e.g., the fellow observes the admitting resident for

a brief moment, then walks away to do other work, returning periodically to observe and

question the admitting resident). Third, team leaders *teach* team members by actively giving instruction on how to perform specific medical procedures. For example, we often observed team leaders teaching less experienced members of the team how to conduct an ultrasound FAST (Focused Abdominal Scan for Trauma) exam. Finally, team leaders *provide hands-on treatment* of the patient when they assist directly in patient care, typically by performing the team's most critical and complex medical procedures.

The first three of these functions match those we identified in the functional team leadership literature: structuring and directing team members' activities, monitoring the team, and teaching and developing team members. TRU leaders' provision of strategic direction engenders swift coordination; the TRU team leader provides team members with a common focus and approach. Monitoring enhances reliability of team performance; team leaders are vigilant in their efforts to, first, avoid treatment errors and, second, to catch treatment errors quickly and correct them. Finally, leader teaching engenders learning and development on the part of more junior team members.

Notably missing from TRU leaders' functions are two functions that are quite prominent in the functional leadership literature: ensuring that team members are motivated and engaged; and establishing norms and routines that enable a positive and safe affective climate. For two reasons, these functions appear to be of limited relevance to the TRU teams we studied. First, the team task – saving trauma victims' lives – is inherently motivating. Particularly when the team is intensely focused on task accomplishment – treating the patient – there is little or no need for leaders to deliver an inspirational message. Second, given frequent changes in team composition, the teams we studied are short-lived. Within-team norms and dynamics that might

influence the affective climate of the team simply have little time to develop. More influential are the norms of the TRU as an institution, we suggest below.

We observed, and interviewees described, one leadership function rarely mentioned in functional models of team leadership: hands-on involvement, or assistance, in the team's performance of its central task. Senior leaders' hands-on involvement in patient care aroused some of the more junior leaders' resentment, when senior leaders seemed to step in more frequently than needed. More commonly, however, junior leaders expressed appreciation and understanding of senior leaders' hands-on involvement during difficult cases. When senior leaders directly participate in patient care, they enhance the team's reliability while modeling medical procedures that junior members of the team may emulate.

The Active Leadership Role

Trauma team leadership resides in no single individual or position. In this sense, trauma team leadership is shared. But, trauma team leadership is rarely if ever shared *simultaneously.* At any given moment, one leader – not three – is expected to be in the active leadership role, actively guiding the team's treatment of the patient. The leadership function most critical to the active leadership role is the provision of strategic direction. The active leader provides strategic guidance for the team, directing the team's focus and procedures during moments of choice or uncertainty. One fellow explained, for example:

> During a code, when someone is dying right in front of you, if there is not a leader there, it just runs horribly. You can feel it. Everyone is looking for someone to speak up or say something. As soon as one person says it, the attention focuses there and all the nurses start taking the person's orders and everything just starts working better. (F6)

A resident noted:

I think in trauma you need the person who's in the press box of the football game – a leader who stands back and watches and sees the errors on the whole field. I mean, the leader should stand there and hear others' assessments. The leader should be taking in the information and making the decisions as far as strategic direction and what needs to be done. (R9)

The active team leader is not necessarily the most senior or expert leader present on the team. We often observed one leader directing team members' actions and providing hands-on care of the patient, while a second, more experienced leader stood back, perhaps four or eight feet from the patient, observing patient care and saying nothing. In this case, the first leader is in the active leadership role, as we define the term.

The Rigidity of the Leadership Hierarchy

The three potential active leaders of the trauma team – the attending, the fellow, and the admitting resident – differ in expertise, experience, and tenure in the TRU. They are ranked in a clear and rigid hierarchy, in which the attending has more expertise, experience, status and power than the fellow, who has more expertise, experience, status and power than the admitting resident. Table 2 provides a sample of relevant quotations from our interviews. This hierarchy has profound implications for the movement of the active leadership role among the three leadership positions. One attending surgeon explained:

Many individuals have the leadership role in question, but there is a very rigid hierarchy underlying that. The flow is one way. The fellow can always supersede the resident, but the resident can't supersede the fellow. The attending can always supersede the fellow and the resident, but neither one of them can supersede the attending. (A5)

Thus, as we clarify below, less senior leaders fulfill the active leadership role in the team when more senior leaders are either absent (e.g., caring for another patient) or when more senior leaders have tacitly given their approval for the junior leader to take on the role. Summarizing the hierarchy from attending, to fellow, to resident, a fellow commented, "How many years have you trained? You win if you have more than the other person (F3)." A nurse explained, "The attending is the general. The fellow is like the colonel, telling the residents what's expected of them. The residents – some are like lieutenants and some are buck privates (N1)."

The Fluidity of Active Leadership: How the Role Shifts

Despite the rigid hierarchy described by attendings, fellows, residents, and nurses, the active leadership role may shift up and down the leadership hierarchy over the course of a fellow's or resident's tenure in the TRU, or even during the care of a single patient. A shift in active leadership occurs when a senior leader (the attending or the fellow) takes over strategic direction of the team, assuming a more active and influential role in the team, or, conversely, when a senior leader recedes from strategic direction, assuming a more passive and less influential role.

Consider the treatment that we observed of the victim of a car accident. The patient arrived by emergency helicopter and was immediately surrounded by the trauma team. The attending surgeon strolled into the TRU a few minutes after the patient's actual arrival in the TRU. He glanced at the team and the patient, said nothing, grabbed a chair and slouched there, approximately eight feet from the foot of the patient's bed, drinking a soda and making notes in a chart. A few minutes later, when the patient moaned a few times in pain, the attending surgeon put down his soda and notes, got up, strode to the patient's bedside, stood right next to the fellow, queried the fellow for a moment, directed the team to perform specific tests and

procedures, and then returned to his chair, soda, and notes, apparently confident of the team's ability to treat the patient's injuries without his further involvement. In this incident – typical of many of the patient care episodes we observed – active leadership shifted, in a matter of minutes, from the fellow (when the attending surgeon was initially slouched in his chair, drinking a soda), to the attending (when the attending stood at the bedside, directing the team), and back to the fellow (when the attending returned to the chair).

Interviewees described these shifts at length. Table 2 provides examples, from our interviews, of the fluid transfer of leadership. Some leadership shifts occur relatively slowly, over a period of days, weeks, or even months. Thus, for example, an attending noted:

> There's a reward for being a really good fellow. It is have the attending back off. That's how you know if the fellow is doing a good job – when the attending pokes his head around the door, sees that you've got everything under control, and goes back and sits down at his computer and starts looking at something else. (A5)

Other shifts in leadership are more frequent, occurring during the initial treatment of a patient. For example, a fellow commented:

> It's kind of like a student driver or student pilot. In other words, the fellow or the attending would be sitting in the seat with the joystick between their legs and/or the brake and so they let the student [the admitting resident] drive or fly the plane. But, the moment there is any turbulence or hazard on the road, it is relatively smooth to transition back and take the controls. So, the resident would feel like they were in this leadership position, but it is a protected leadership role. You try to give them enough rope to hang themselves but not enough to hang the patient. (F2)

In such cases, the transition of leadership is quite seamless, as a resident described:

Sometimes when I'm treating the patient, the fellow or attending will come right over my shoulder or right beside me. They make their presence known and I just step out of the way so they can have access to the patient. Sometimes they'll just stand where they are and ask the patient questions. If the patient needs something quickly, a lot of times the fellow or the attending – it depends on whoever's the closest to a pair of sterile gloves – will jump in and make a decision. (R10)

Leadership, in each of these instances, seems to be a baton, whose possession is controlled by the most senior members of the hierarchy. These individuals may assume control, taking possession of the baton, at any time. Yet, often they relinquish possession of the baton to those lower in the hierarchy, although they are likely to stay at arm's length – figuratively, but sometimes literally – from possession of the baton.

Determinants of Active Leadership: When and Why the Role Shifts

In observing and interviewing TRU members, we identified three factors that together appear to determine which member of the leadership hierarchy is most likely to be the active team leader, carrying the baton, at any given moment: (1) patient condition; (2) individual differences among the attendings and fellows; and (3) confidence in self and others. Table 3 provides a sample of relevant quotations from our interviews regarding these topics.

Patient condition. For the purpose of understanding dynamic changes in active leadership, we focus on two dimensions of patient condition: Urgency and novelty. Urgency refers to the extent to which the patient's condition necessitates immediate intervention to save the patient's life. Novelty refers to the extent to which the patient's condition is unfamiliar (non-routine) to caregivers, especially residents. Figure 1 summarizes our discussion in this section.

The greater the urgency and novelty of a patient's condition, the more likely the attending or fellow is to take the active leadership role during patient treatment, giving strategic direction, providing hands-on care of the patient, and/or monitoring the team closely. Numerous interviewees described this pattern. As one fellow explained:

> When the patient is crashing, the attending takes the leadership from the other ones because it's life and death. When it's routine, the attending kind of steps back and lets the fellow run it. The fellow does the same thing with the residents. (F1)

Conversely, when the patient's condition is low in urgency and novelty (for the TRU), senior leaders are likely to step back, effectively delegating active leadership of the team to the admitting resident. The admitting resident provides strategic direction to the team and hands-on care of the patient. The fellow is likely to monitor the team from a short distance, watching the team without comment. The attending is likely to move away entirely, neither watching nor communicating with the team in any way. When a patient's condition is novel, but care is not urgent, senior leaders have the opportunity to teach more junior members of the team how to perform medical procedures. The condition of the patient is not so routine as to obviate teaching, nor so urgent as to necessitate immediate intervention. One fellow explained:

> If it is not a life-threatening situation and there is a great deal of time, then we will take a great deal of time. I have spent hours with a resident to get them to get a procedure right – just doing it very slowly, step by step, so they finally get it. (F2)

Finally, if a patient's condition is urgent but low in novelty, senior leaders are likely to delegate the provision of strategic direction and hands-on care of the patient to more junior members of the hierarchy, but to monitor the team's performance closely.

Individual differences.   While the condition of the patient is highly influential, individual differences among the attendings and fellows also affect the display of leadership within a team. Our observations and interviewees' comments made clear that the attending surgeon, as the most expert and senior member of the team, has the right to intervene in patient care, assuming the primary leadership role, as he/she sees fit. The fellow has the right to intervene in patient care, taking over the primary leadership role from the admitting resident, but not from the attending surgeon. The extent to which the attendings and fellows do intervene depends in part on their personal style, or desire for control. Interviewees described some attendings and fellows as "micromanagers," "Type A," and "hands-on," and other attendings and fellows as "laid back," "Type B," and "hands-off."   The more an attending or fellow is "Type A" and "hands-on," the more likely he or she is to provide close verbal and physical monitoring of the team, to provide strategic direction to the team, and/or to carry out key medical procedures him or herself. The more an attending or fellow is "Type B" and "hands-off," the more likely he or she is to monitor the team in a more removed and passive fashion and to allow others more junior in the hierarchy to provide strategic direction and to perform key medical procedures.

Confidence. Finally, the more confidence the attending has in the fellow's abilities, the more likely the attending is to cede leadership of patient care to the fellow. Similarly, the more confidence the fellow has in the attending resident, the more likely the fellow is to cede leadership to the resident. An attending explained:

> Suppose two patients come in at the same time. I have to ask myself, "How much can I trust the fellow to totally manage one patient while I manage the other?" And it really boils down to whether I can trust them alone for the next ten minutes when I'm totally involved with another patient. (A8)

Intriguingly, interviewees suggested that attendings and fellows must not only be confident in the abilities of those lower in the hierarchy, they must also have confidence in their own ability to rectify any mistakes made by those lower in the hierarchy:

> In a surgical procedure, the confident surgeon will allow the resident or fellow to do more because the confident surgeon knows that he or she can get them out of it. It takes a lot of confidence to do that. (A2)

In sum, the more non-routine and urgent the patient's injuries and the more controlling the attending's personal leadership style, the more likely the attending is to play the active leadership role. These tendencies are tempered by the attending's confidence in the fellow and by his/her confidence in his/her own abilities to correct and overcome any errors in patient care that the fellow might make. Similarly, fellows are more likely to play the active leadership role if the patient's injuries are non-routine and urgent, if the fellow is highly controlling, and if the fellow has little confidence in the residents and in his/her own ability to remedy any treatment errors the residents might make.

Earlier, we described the active leadership role as a baton, but the TRU leadership system, as a whole, is perhaps more aptly described not as a relay race, but as a dance in which the three team leaders step forward or back in response to the patient's changing condition and to the actions, competence, and confidence of others in the leadership hierarchy. The picture that emerges from this description is far more dynamic than that of traditional leadership models. In the TRU, leadership is dynamic – a system, or dance, of moving parts.

Enabling Conditions

In the complex and dynamic dance of TRU team leadership, leaders would, it seems, often step on one another's toes. Surely the system could engender considerable conflict among

the leaders and frequent mistakes in patient care. Admitting residents and fellows might resent

and resist the intervention of attendings who interrupt and take over care of the patient.

Attendings might resent and resist the expectation that they stand idly by, watching less

experienced doctors perform tasks that the attendings could themselves perform more efficiently.

Attendings might overestimate the experience and competence of the fellows, or fellows

overestimate the experience and competence of the residents, resulting in grievous errors.

Further, residents and other team members might question fellows' and attendings' authority and

decision-making, delaying treatment of the patient.

We observed, and interviewees described, few such conflicts and errors, however. We

theorize that a set of three enabling conditions – routines, tradition, and values; expert support

staff; and time awareness – complement and reinforce the leadership system, reducing the

likelihood of conflict and error and thereby enhancing the likelihood of reliable performance,

coordination and learning. Figure 2 depicts our conceptualization while Table 4 provides a

sample of relevant quotations from our interviews.

Routines, tradition, and values within the STC. A set of routines, traditions, and values

serve to structure, explain, and justify interactions within the trauma teams we studied, reducing

opportunities for conflict and error. Although the treatment of trauma patients is inherently

unpredictable and uncertain, the initial treatment of the patient is guided by routines or protocols

that organize and prescribe the team's activities. These routines are detailed in the Advanced

Trauma Life Support (ATLS) manual, published by the American College of Surgeons. An

attending anesthesiologist described the ATLS as "the handbook we are singing from during the

first ten minutes of any resuscitation" and noted that "most of the attending surgeons here wrote

it and teach it" (A1). The ATLS specifies the priorities – literally, the ABC's – of patient care.

As a fellow explained:

> To an outsider looking in, it looks like chaos. But everything is done in an orderly
>
> fashion. So, when a patient comes in, airway's first [A], breathing's second [B],
>
> circulation's third [C]. That should happen on every patient. … It all looks unorganized,
>
> but it's organized. (F9)

The ATLS and other STC protocols ensure that, at least in relatively routine cases of traumatic

injury, treatment priorities and strategies are well established. This facilitates coordination and

enhances fellows' and attendings' comfort in delegating the design and delivery of patient care to

residents. Further, the availability of clear routines reduces the likelihood of errors. Finally,

residents' and fellows' knowledge that STC attendings contributed to the ATLS enhances their

respect for the attendings and their acceptance of attendings' interventions.

The TRU's leadership system is also strengthened and bolstered by surgical tradition.

Interviewees described the attending's position of hierarchical authority as "ingrained in every

surgeon in the operating room" (A3), "the way it is done in surgery" (R1), and "part of the

culture of medicine" (A5). Explaining this tradition, interviewees emphasized the dangers

associated with a lack of clear leadership: "Patients suffer without leadership. If you do a

democracy, patients will suffer. You don't take a vote on what to do with the patient" (F7). In

short, TRU team members expect and value hierarchical leadership and authority. At the same

time, interviewees emphasized that surgical tradition enshrines teaching. The traditional mantra

of surgical training is to "see one, do one, teach one" – that is, to see a procedure, do one (or

more), and then teach others to do the procedure (Katz, 1999). This reinforces the expectation

that senior leaders delegate to more junior leaders, as junior leaders learn by (monitored) doing.

STC values further legitimate the STC leadership system. Interviewees emphasized two key values: quality of patient treatment and learning. Quality of patient treatment is preeminent – the ultimate goal, "what we are here for" (F6), as one fellow put it. An attending commented, "It's the focus on the care of the injured that makes this place great. There's no other place in the country that is so focused on a particular kind of patient" (A6). At the same time, the focus on patient treatment is balanced and complemented by a commitment to the training of fellows and residents within the TRU. An attending noted: "One of our primary purposes in taking care of patients is training residents and fellows along the way. It's a real balance between patient care and education" (A3). The commitment to quality of patient care enhances team members' acceptance of attendings' and fellows' interventions; those lower in the hierarchy know that more senior leaders' interventions are motivated by concerns for patient well-being. At the same time, the commitment to training motivates attendings and fellows to cede control of patient care to the less experienced members of the team.

Expert support staff: The nurses. When we asked interviewees to describe how the TRU differs from other trauma care centers and emergency rooms, many extolled the experience, competence, and empowerment of TRU nurses. Interviewees described the TRU as "nurse strong" and emphasized that TRU nurses "have an incredibly high level of knowledge" and "are valued and given a lot of freedom." Nurses are lower in the formal hierarchy than are residents, but nurses exert considerable informal influence over trauma care, and particularly over the residents. Attendings sanction and value nurses' role. As one attending put it:

> There's sort of like a blank check order form that, as the attending physician, I'll sign and
> assume the responsibility for their actions, saying that this would have been an order of

mine. It is unique. In our TRU, the nurses act almost independently under our orders.

(A7)

TRU nurses' power in the TRU rankles some residents. But, fellows and attendings discount

residents' complaints. A fellow commented:

> I tell new residents, "Your nurse is your best friend. The day that you understand that
>
> and accept that and respect that will be the day that you do well here." (F5)

The presence of highly skilled, experienced, and empowered nurses provides additional

redundancy, reducing the likelihood of medical errors. At the same time, fellows' and

attendings' knowledge that nurses can and do monitor the quality of residents' work enhances

fellows' and attendings' comfort in delegating patient care to residents. An attending

summarized:

> The nurses here protect the patients. They know more than most of the residents they're
>
> working with. They will come and get the attending if the residents are screwing up, or
>
> they'll tell the residents to stop screwing up directly. Every single month, the residents
>
> complain that the nurses in the TRU have too much freedom and too much power. But
>
> the nurses need it, because how else are they going to protect the patients? (A5)

Time awareness. A final factor that strengthens and enables the effective functioning of

the hierarchical leadership system is time awareness – TRU members' conscious awareness of

the transience of their experiences in the TRU. Residents know that their time in the TRU is

limited to just one or two months. Moreover, they know that, in due time, they will become

fellows, if they choose to do so, and attendings. Fellows know that they will spend just three

months in the TRU and a year in total in the Shock Trauma Center, after which they will become

attendings. And, attendings and nurses know that residents come and go each month and that fellows come and go each year. For example, a fellow commented:

> When there's friction between a fellow and an attending, the fellow just has to wait until the end of the month or the week, because you know that the attendings change every week. So, you just say, "What the hell." You get by. (F6)

Further, a nurse reported:

> Often times, we'll pick this month's dumbest team of residents. Everyone will say, "My God, I can't wait for this batch to leave." We have had 36 groups of residents in the last year and there have probably been three or four months when everybody was just counting the days (N2).

Such awareness of the predictable passage of fixed periods of time enhances junior leaders' acceptance of senior leaders' interventions. Junior leaders know that they will not always work under the specific leader whom they find annoying. Moreover, they know that their own time will come – that they will gain positions of greater authority at the end of their residency or fellowship. Similarly, awareness of the predictable passage of time enhances senior leaders' tolerance of the junior leaders whom they supervise. Any annoying subordinate is likely to be out of the TRU by the end of the month.

Attendings also see benefits from the frequent and predictable turnover of residents and fellows in the TRU:

> You can meet a lot of different people and you can learn a lot of different things. They will say, "We would never do this," and you kind of explain why we do things here a certain way. It's more interesting than the same people doing the same thing all the time. (A2)

Further, turnover among residents and fellows increases attendings' vigilance and hence their reliability:

> This constant short rotation of the residents and fellows for a month or two can be very disruptive at times, but it keeps you on your toes and prevents you from falling into the same lull so to speak. I examine all of the patients myself. I look at all the films myself. I look at all the lab work myself. (A4)

In sum, a set of enabling conditions – routines, tradition, values, expert support staff, and time awareness – together engender acceptance of both the rigid hierarchy of roles and the dynamic delegation that define the TRU's leadership system. Dominant leadership theories have devoted little attention to the contextual factors that enable, or detract from, individuals' performance of leadership functions within specific teams or organizations. Within the TRU, contextual factors reinforce and legitimate the TRU team leadership system, engendering shared expectations and acceptance of TRU team leaders' functions and behaviors.

Discussion

Facing tasks of great urgency, uncertainty, and consequence, the action teams of the TRU coordinate swiftly, train and develop their novice members, and perform reliably, despite frequent changes in team composition. Integral to these teams' performance, our findings suggest, is a paradoxical leadership system characterized both by rigid hierarchy and by dynamic fluidity. The leadership hierarchy ensures that team members know to whom to defer in moments of uncertainty and conflict, facilitating coordination. The dynamic flow of leadership enhances learning and reliability. When senior leaders delegate authority, junior leaders learn by doing. When senior leaders re-assert their authority, they enhance reliability, preventing or managing errors in patient care. At these times, junior leaders learn by observation and by

following senior leaders' directives. Key leader behaviors also contribute to coordination, learning, and reliability. Leaders enhance coordination by providing strategic direction. They enhance learning by teaching. And they maintain reliability by monitoring patient care and intervening in a hands-on fashion when their skills are needed.

And yet the leadership system we saw in the TRU is more than the sum of these parts. It is an integrated, dynamic system – a dance. A snapshot at any given moment cannot capture the leadership of the TRU teams. Leadership shifts too rapidly in form (providing strategic direction, teaching, monitoring, and delivering hands-on care) and in position (attending, fellow, or resident) for any moment's picture to provide a veridical assessment of team leadership. Indeed, the success of the system resides, at least in part, in its dynamic nature – in attendings' confidence that they can reassert authority as quickly and easily as they can delegate it and in fellows' and residents' confidence that their leadership roles will change and grow over time. TRU team leadership is truly a system; its elements are mutually reinforcing. Thus, for example, the turnover among team members for which the leadership system compensates and adjusts also enables the leadership system, ensuring that team members willingly tolerate – at least for a time – stresses and irritations that the leadership system may cause. The ideal outcomes of the system are mutually enhancing. Swift coordination among team members enhances reliability of performance. Team member learning also contributes to reliable performance; the more skilled team members are, the more effectively the team can provide care to patients – often more than one at a time – whose injuries are complex, uncertain, and urgent. Even turnover contributes in some ways to reliability of performance; attendings benefit from exposure to young doctors trained in other institutions, learning from their ways. Further, the need to be vigilant in supervising less experienced doctors prevents complacency among the senior staff.

While our findings are limited by our reliance on data collected in just one organization, they describe an intriguing and unusual leadership system that may enhance the performance not just of TRU teams, but of other teams in which immediate task performance is critical, goals are clear, team members vary in their expertise, experience, and need for training, and the composition of the team changes frequently. Surely the rigid hierarchy and dynamic delegation of the TRU leadership system are not appropriate for all teams, nor even for all action teams. The TRU leadership system promotes reliable performance in emergencies and the development of the team's novice members, not shared learning by the team as a whole, nor team creativity. Edmondson, Bohmer, and Pisano (2001) have eloquently described the challenges that cardiac surgery teams faced in implementing a new surgical procedure. The teams they studied benefited from continuity of team membership and from the surgical leader's creation of a shared, safe climate for learning within the team. These characteristics facilitated shared team learning, and thus the successful implementation of a complex and radically new surgical procedure; the changing composition, rigid hierarchy, and dynamic delegation of the TRU teams would have impeded, not facilitated, implementation of the new procedure, we suspect. Similarly, the changing composition, rigid hierarchy, and dynamic delegation of the TRU teams would, we suspect, interfere with the performance of teams tasked with the development of creative new products and processes (e.g., Hargadon and Sutton, 1997). In sum, the TRU leadership system is by no means a panacea or universal model for action team leadership. And, yet, the implications of our analysis and explication of the TRU leadership system transcend the TRU itself, we believe. While the TRU leadership system as a whole may generalize only to a subset of action teams, key elements of our analysis suggest new directions for team leadership theory, research, and practice, as we discuss below.

Future Directions for Team Leadership Theory, Research, and Practice

Dominant models of leadership, as we have noted, rest on the assumption that subordinates are led by a single leader. In recent years, a number of authors have suggested that leadership may be shared among the members of a unit or a team. Our findings lend credence to this assertion. Leadership is clearly shared within the TRU teams we studied, but not simultaneously. Rather, the active leadership role rotates among the individuals who occupy three hierarchically differentiated positions of expert authority within the team. Thus, our findings highlight a highly structured form of shared leadership – hardly the emergent and informal model of shared team leadership suggested in recent writings (e.g., Avolio et al., 1996; Pearce and Sims, 2002; Pearce and Conger, 2003). Our findings thus invite further conceptual and empirical investigation of the nature, extent, determinants and consequences of shared leadership. We urge researchers to test the common assumption that leadership functions are the province of one leader per unit – to explore the possibility that leadership functions are shared among key players within the unit. For practitioners – formal unit leaders – our findings send a strong message that leadership functions can, in many instances, be shared and that dynamic delegation may enhance the development of unit members and thus the capacity of the unit as a whole.

Dominant models of leadership draw particular attention to the leader's role in building follower motivation and commitment (Dansereau, Graen, and Haga, 1975; Bass, 1985; Graen and Uhl-Bien, 1995; Avolio, 1999). In contrast, the functional team leadership approach casts a much broader net, suggesting that leaders can and should perform a array of functions: whatever is necessary to fulfill team needs (McGrath, 1962; Hackman and Walton, 1986; Zaccaro, Rittman, and Marks, 2001). Our findings document four key functions performed by team

leaders. Charisma and consideration – ensuring team motivation, commitment, and a positive interpersonal climate – are notably missing from this list. This reinforces the idea – central to the functional leadership approach – that leader functions are context-specific. Charisma and consideration are critical leadership functions in many contexts, we assume, but not all. Accordingly, we urge researchers to consider not just the transformational behavior of the leaders they study, but other behaviors as well; other leadership functions may well be as or more important for team effectiveness in many contexts. This is, of course, likely to be sound advice for practicing managers as well.

Most dominant models of leadership present a largely static picture of leadership. The leader is assumed, implicitly, to display the same style over time (Bass, 1985; Avolio, 1999), or is encouraged to vary his or her approach in response to specific and limited contingencies (e.g., follower professionalism, task structure) (Hersey and Blanchard, 1969; House, 1971). Scholars of team leadership suggest a more dynamic approach, in which leader functions evolve over time as a team matures and also vary as a function of team task cycles (Kozlowski et al., 1996). Our findings, however, suggest a level of dynamism not found, to our knowledge, in dominant or emerging perspectives on leadership. In the TRU teams we studied, the dance of leadership is rapid and fluid; both the identity and the functions of the active team leader change quickly and repeatedly. Organizational scholars have called recently for new, more "time-sensitive" research (Mitchell and James, 2001). Our findings suggest that research documenting in detail the extent, nature, and consequences of changes in leader identity and behavior over time – even over short intervals – may yield important and novel insights.

Dominant models of leadership devote relatively little attention to the context of leadership – that is, to the team, unit, or organizational conditions that may define, shape,

reinforce, and/or limit leader behaviors in a given setting. Our findings suggest that TRU values, traditions, routines, training schedules, and support staff play an important role in facilitating and legitimating the TRU leadership system as a whole. Numerous studies and conceptual models suggest that leaders shape their units' climate, culture, norms, routines, and staffing (Klein, Conn, and Sorra, 2001; Schein, 1992; Schneider, 1987). Our findings suggest that these effects may well be reciprocal. Not only may leaders shape their units' climate, culture, norms, routines, and staffing, they may also be shaped by them. In short, leadership does not occur in a vacuum. It is a part and product of its surroundings. For researchers, our findings encourage new exploration of the extent to which organizational and unit characteristics shape, constrain, and enable organizational and unit leadership. For managers, our findings encourage the creation of an organizational context to support effective leadership.

Reflecting on our findings and the implications for leadership theory, research, and practice that we have outlined above, we are struck by the implicit conceptualization of leadership that underlies the TRU system – a conceptualization of leadership quite different from that of dominant models of leadership. Largely implicit within dominant models of leadership is a conceptualization of leadership as a behavioral style, an individual difference, characterizing an individual leader's interactions with his or her subordinate(s). A leader who is high in consideration is kind and warm to his or her subordinate(s) (Stogdill, 1950). A leader who is high in initiating structure provides goals, standards, directions, and schedules for his or her subordinate(s). A leader who is high in transformational leadership is inspiring and intellectually stimulating for his or her subordinate(s) (Bass, 1985; Avolio, 1999). Leadership is thus personalogical – a phenomenon inextricably linked to the person who occupies the leadership

role. Leadership is what a given leader does in interacting with and attempting to influence his or her subordinate(s).

A very different conceptualization of leadership emerges from our findings. The TRU leadership system suggests that leadership is a role – or, more specifically, a dynamic, socially enabled and socially constrained set of functions which may be filled by the numerous individuals who, over time, occupy key positions of expert authority on the team. Leadership, in this conceptualization, is not the product of a leader's individual differences, but of an organization's or unit's norms, routines, and role definitions. This conceptualization invites theory and research on leadership as a system or structure, a characteristic not of individuals, but of the organization or unit as a whole. The level of analysis shifts from the individual leader up to the unit or organization in which leaders are embedded. This conceptualization does not contradict the more traditional conceptualization of leadership. It simply suggests an additional lens through which to investigate organizational and team leadership.

Conclusion

The topic of team leadership is too important to be so overlooked in the organizational literature. Using qualitative methods, we have described and analyzed a complex, paradoxical system of team leadership. The system is of greatest direct relevance to teams, like the TRU teams, in which immediate task performance is critical, team members vary in their expertise and experience, and team composition changes frequently. Nevertheless, our findings may, we hope, spur new research and theory regarding the distribution of leadership in teams, the multiple functions of team leadership, the dynamism of leadership over time, and the conditions that enable and shape leadership within a given setting.

References

Armstrong, B., and J. Carpenter

1995 "Shock trauma Baltimore, USA." Intensive Critical Care Nursing, 11: 151-156.

Avolio, B. J.

1999 Full Leadership Development: Building the Vital Forces in Organizations. Thousand Oaks, CA: Sage.

Avolio, B. J., Jung, D. I., Murry, W., and Sivasubramaniam, N.

1996 "Building highly developed teams: Focusing on shared leadership process, efficacy, trust, and performance." In M. M. Beyerlein, D. Johnson, and S. T. Beyerlein (eds.), Advances in Interdisciplinary Studies of Work Teams: Vol. 3. Team Leadership: 173-209. Greenwich, CT: JAI Press.

Bass, B. M.

1985 Leadership and Performance Beyond Expectations. New York: Free Press. 1990 Bass and Stogdill's Handbook of Leadership: Theory, Research, and Managerial Applications, 3rd ed. New York: Free Press.

Bass, B. M.

1998 Transformational Leadership: Industry, Military, and Educational Impact. Mahwah, NJ: Erlbaum.

Bell, B. S., and S. W. J. Kozlowski

2002 "A typology of virtual teams: Implications for effective leadership." Group and

Organization Management, 27: 14-49.

Campion, M.A., G. J. Medsker, and A. C. Higgs

1993 "Relations between work group characteristics and effectiveness: Implications for

designing effective work groups." Personnel Psychology, 46: 823-850.

Cappelli, P.

1999 "Career jobs are dead." California Management Review, 42: 146-167.

Cappelli, P.

2000 "A market-driven approach to retaining talent." Harvard Business Review: 103-111.

Cascio, W. F.

2003 "Changes in workers, work, and organizations." In W. C. Borman, D. R. Ilgen, & R. J.

Klimoski (eds.), Handbook of psychology: Volume 12 industrial and organizational psychology:

401-422. Hoboken, NJ: John Wiley & Sons.

Cohen, S. G., and D. E. Bailey

1997 "What makes teams work?: Group effectiveness research from the shop floor to the

executive suite." Journal of Management, 23: 239-290.

Conger, J. A.

1998 "Qualitative research as the cornerstone methodology for understanding leadership."

Leadership Quarterly, 9: 107-123.

Conger, J. A., and C. L. Pearce

2003 "A landscape of opportunities: Future research on shared leadership." In C. L. Pearce & J.

Conger (eds.), Shared Leadership: Reframing the Hows and Whys of Leadership: 285-303.

Thousand Oaks, CA: Sage Publications.

Dansereau, F., G. Graen, and J. Haga

1975 "A vertical dyad linkage approach to leadership within formal organizations: A

longitudinal investigation of the role making process." Organizational Behavior and Human

Performance, 36: 46-78.

Edmondson, A. C.

2003 "Speaking up in the operating room: How team leaders promote learning in

interdisciplinary action teams." Journal of Management Studies, 40: 1419-1452.

Edmondson, A. C., R. M. Bohmer, and G. P. Pisano

2001 "Disrupted routines: Team learning and new technology implementation in hospitals."

Administrative Science Quarterly, 46: 685-716.

Eisenhardt, K. M.

1989 "Building theories from case study research." Academy of Management Review, 14: 532

550.

Glaser, B. G., and A. L. Strauss

1967 The Discovery of Grounded Theory: Strategies for Qualitative Research. New York:

Aldine de Gruyter.

Graen, G. B., and M. Uhl-Bien

1995 "Relationship-based approach to leadership: Development of leader-member exchange

(LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective."

Leadership Quarterly, 6: 219-247.

Guzzo, R. A., and M. W. Dickson

1996 "Teams in organizations: Recent research on performance and effectiveness." Annual

Review of Psychology, 47: 307-338.

Hackman, J. R.

2002 Leading Teams: Setting the Stage for Great Performances. Boston: Harvard Business

School Publishing Corporation.

Hackman, J. R., and R. E. Walton

1986 "Leading groups in organizations." In P. S. Goodman (ed.), Designing Effective Work

Groups: 72-119. San Francisco: Jossey Bass.

Hall, D. T., and J. E. Moss

1998 "The new protean career contract: Helping organizations and employees adapt."

Organizational Dynamics, 26: 22-38.

Hargadon, A., and R. I. Sutton

1997 "Technology brokering and innovation in a product development firm." Administrative

Science Quarterly, 42: 716-749.

Hersey, P., and K. H. Blanchard

1969 Management of Organizational Behavior. Englewood Cliffs, NJ: Prentice-Hall.

House, R. J.

1971 "A path goal theory of leader effectiveness". Administrative Science Quarterly, 12: 321-

338.

House, R., J., and R. N. Aditya

1997 "The social scientific study of leadership: Quo vadis?" Journal of Management, 23: 409-

473.

Kane, T. D., S. J. Zaccaro, T. T. Tremble, and A. D. Masuda

2002 "An examination of the leader's regulation of groups." Small Group Research, 33: 65-120.

Katz, P.

1999 The Scalpel's Edge: The Culture of Surgeons. Needham Heights, MA: Allyn and Bacon.

Klein, K. J., A. B. Conn, and J. S. Sorra

2001 "Implementing computerized technology: An organizational analysis." Journal of Applied

Psychology, 86: 811-824.

Komaki, J. L., M. L. Desselles, and E. D. Bowman

1989 "Definitely not a breeze: Extending operant model of effective supervision to teams."

Journal of Applied Psychology, 74: 522-529.

Kozlowski, S. W. J., and B. S. Bell

2003 "Work groups and teams in organizations." In W. C. Borman, D. R. Ilgen, and R. J.

Klimoski (eds.), Comprehensive Handbook of Psychology: Industrial and Organizational

Psychology, Vol. 12: 333-375. New York: Wiley.

Kozlowski, S. W. J., S. M. Gully, E. Salas, and J. A. Cannon-Bowers

1996 "Team leadership and development: Theory, principles, and guidelines for training leaders

and teams." In M. M. Beyerlein, D. Johnson, and S. T Beyerlein (eds.), Interdisciplinary Studies

of Work Teams: Vol. 3. Team Leadership: 253-291. Greenwich, CT: JAI Press.

Kozlowski, S. W. J., D. J. Watola, J. M. Nowakowski, B. H. Kim, and I. C. Botero

2004 "A functional theory of dynamic and adaptive leadership." In S. W. J. Kozlowski (Chair),

An Exploration of the Dynamics of Functional Adaptive Leadership. Symposium conducted at

the 19th Annual Conference of the Society for Industrial and Organizational Psychology,

Chicago, IL.

McGrath, J. E.

1962 Leadership Behavior: Some Requirements for Leadership Training. Washington DC: U.S.

Civil Service Commission.

Miles, M. B., and A. M. Huberman

1984 Qualitative Data Analysis: A Source Book of New Methods. Beverly Hills, CA: Sage.

Mitchell, T. R., and L. R. James

2001 "Building better theory: Time and the specification of when things happen." Academy of

Management Review, 26: 530-547.

Pearce, C. L., and J. A. Conger

2003 Shared Leadership: Reframing the Hows and Whys of Leadership. Thousand Oaks, CA:

Sage Publications.

Pearce, C. L., and H. P. Sims

2002 "The relative influence of vertical vs. shared leadership on the longitudinal effectiveness of

change management teams." Group Dynamics: Theory, Research, and Practice, 6: 172-197.

Rosenwald, M.

2003, October. "Yesterday, they would have died." Popular Science, 66: 56-64.

Rousseau, D. M., and C. Libuser

1997 "Contingent workers in high risk environments." California Management Review, 39: 103-123.

Schein, E. A.

1991 Organizational culture and leadership. San Francisco, CA: Jossey-Bass

Schneider, B.

1987 "The people make the place." Personnel Psychology, 40: 437-453.

Schriesheim, C. A., S. L. Castro, and C. C. Cogliser

1999 "Leader-member exchange (LMX) research: A comprehensive review of theory, measurement and data analytic practices." Leadership Quarterly, 10: 63-113.

Stewart, G. L., and C. C. Manz

1995 "Leadership for self-managing work teams: A typology and integrative model." Human Relations, 48: 747-770.

Strauss, A., and J. M. Corbin

1990 Basics of qualitative research: Grounded theory procedures and techniques. Newbury Park, CA: Sage.

Stogdill, R. M.

1950 "Leadership, membership, and organization." Psychological Bulletin, 47: 1-14.

Sundstrom, E., K. P. De Meuse, and D. Futrell

1990 "Work teams: Applications and effectiveness." American Psychologist, 45: 120-133.

Waldman, D. A., T. Lituchy, M. Gopalakrishnan, K. Laframboise, B. Galperin, and Z. Kaltsounakis

1998 "A qualitative analysis of leadership and quality improvement." Leadership Quarterly, 9: 177-201.

Weick, K., K. Sutcliffe, and D. Obstfeld

1999 "Organizing for high reliability: Processes of collective mindfulness." Research in Organizational Behavior, 21: 81-123.

Yukl, G., and D. D. Van Fleet

1992 "Theory and research on leadership in organizations." In M. D. Dunnette & L. M. Hough (eds.), Handbook of Industrial and Organizational Psychology (2nd ed., Vol. 3). Palo Alto, CA: Consulting Psychologists Press.

Zaccaro, S. J., A. L. Rittman, and M. A. Marks

2001 "Team leadership." Leadership Quarterly, 12: 451-483.

Table 1: *Identity of Team Leader, Leadership Findings, and Criteria for Evaluation*

Topic		Evidence
Identity of Team Leader		We generally consider two persons to be leaders. One is the trauma attending and the other is the trauma fellow or chief resident of that team. (A7)
		I would say, when you have a more hands-off attending, the leader becomes the fellow in my experience in the severe trauma cases. In trauma cases where it's really more routine and not as critical, the resident is really the team leader, the resident who is taking that patient really is the leader. (R3)
		The leader is the admitting resident who's been identified by the team as a whole, prior to the patient arriving. When we get a new patient, that role rotates to another person. So we attempt to basically alternate the leaders, to give everyone a chance for that leadership training. (R8)
Leadership Behaviors	Strategic Direction	Well, in a perfect world the leader would have their eye on the big picture, coordinating the entire plan of care for the patient. (A1)
		Being able to lead people and being able to say – "okay, this is our overall goal, this is where we need it to be, this is the path that we need to take" – is more important than doing it all yourself. (A3)
		The first thing that I try and do is staging, direction, and telling who to do what. (F7)
	Monitor	I think in terms of monitoring, you have the Ronald Reagan slogan: trust but verify. So the responsibility of the attending is to make sure that everything is as it appears to be on the books. (F2)
		It's kind of interesting because you tell a person, "This is your patient, you put the line in, you do this, you do that, it is your patient." You have given him/her leadership but you are there saying things like, "Ok. What do you do next? What are you thinking?" (F1)
		The fellow and the attending have to monitor the team to make sure that you don't have a goofball trying to do a rescue if he doesn't know how to do it, but simply wants to. (R11)
	Hands On	As the severity of the injury gets worse, you will see more of an intervention. If the patient is coding, you will see my hands on, cutting the patient. I will be hands on. (A2)
		Some attendings are very hands on. And the more hands on an attending is, the more it takes away from your role as a fellow. And sometimes that's not good. Sometimes you really want somebody whose hands on because you don't know what the hell to do. (F5)
		When things are going sour, when the patient is crashing, or when the residents can't accomplish something, that is when I step in. I take off my jacket and get my hands dirty. (F6)
	Teaching	It is not hard to be a good leader, you just step in and take over in that sense, but it is hard to be a good educator. It is hard to fulfill that function of protecting the patient and helping them at the same time. (A5)

		I say, "Okay, now watch me do this. I did this intervention. This is the response." It's like, "See one, do one, teach one." They see you doing it, they're gonna do it, and then later on they'll be able to teach somebody else to do it. (F4)
		The second you're an intern, you're teaching medical students. I mean, that's just how medical education is. As soon as you finish, you become a teacher to someone. And there's always somebody to teach you as well. (F7)

Table 2: *The Rigid Hierarchy and Fluidity of Leadership*

Topic	Evidence
Rigid Hierarchy	They really try to put a large emphasis on the hierarchy and the senior is always responsible for the junior and the junior is always responsible for the med. student. (R6)
	This is how you discuss surgeons: We're a pack of wolves. We're not a pack of dogs. This means we are all wild. There is a hierarchy. Somebody is in charge and that person hunts first, kills first, but we hunt in a pack. (F1)
	How many years you have trained: You win if you have more than the other person. Period. (F3)
	It is military in the sense of how strong the hierarchy is. (A3)
Dynamic Fluidity	So for each individual patient, the resident was basically in charge to the point where they were either beyond their capabilities of dealing with that particular patient, or they needed some guidance and that's when I would step in. That is when my leadership role takes over. The same goes, I would think, for an attending. If he would see that I was beyond my capabilities, I was missing a certain aspect that he thought was important, then he would step in and bring that to my attention. So that is the way that I let the leadership role kind of evolve, starting from a resident's standpoint. (F4)
	You can take leadership in different ways – some direct, some indirect. If I've seen people keying in on me to provide leadership, and I'm trying to bring the fellow along, I will say to the fellow, "What do you think?" Or, if it's going the wrong way, I become very eager. My voice becomes very black and white and they know we are going to do it this way. It is clearly emphatic. (A3)
	It's not so much that they push you out of the way or take the tube out of your hands or whatever. They'll start speaking up more and then automatically, people recognize them as someone of a higher level, so they must be in charge of the resuscitation. (R9)

Table 3: *Patient Condition, Individual Differences, Confidence in Self & Others*

Topic	Evidence
Patient Condition	If the patient is not as critical, then I sit back more and allow the resident and the fellow to kind of work the patient up and then tell me what they want to do and I can either tell them yes or no. (A2)
	If something goes wrong or the patient is critically ill, then the fellow moves in there, and they'll move that person out of the way pretty quickly. And if it is really, really wrong, then the attending will move in. (A5)
	I guess if it's a really sick patient –like a thorocotomy – then, yeah, they'll step in, and they're the ones running it and doing it. I think that just comes down to experience. I've seen a number. I've done one. I definitely wouldn't be comfortable saying, "You know, you can just go step back over there. I've got it." (R7)
Individual Differences	There are more passive fellows and then there are very active and aggressive fellows that really from the get-go want to be in the ultimate leader role and do everything possible to be complete, to be compulsive, to be pushing care forward. So there are some different personalities and it is an interactive thing. And the same is true I think with attendings. My leadership style is maybe more strict than others' styles. (A4)
	Everybody is a little different. Everyone has their individual styles in terms of how they want to go about playing their role as a leader. Some are more hands on, some are more apt to delegate than others, and some are more of an educator than others. (F4)
	Well, that depends on the attending you're working with. Some attendings like to be more hands-on than others. My first week here, I worked with an attending who liked to do everything himself. Our attending this week is much more hands-off, you know? He may not even have gloves on, and is standing back and letting us do what needs to be done and making suggestions but not really getting too hands-on. (R3)
Confidence in Others	Some of the residents we work with have technically more years of experience than the fellows have. It happens every once in a while. And you see one and know that he is going to do a good job. You watch a couple of times and you can trust him. Other ones, especially the ones that start in July, are a doctor for five hours before they are trying to manage a trauma patient. In that case, I am not going to walk away. I am not going to let them put an IV in by themselves. (F3)
	You figure out who is competent really fast. And how do you figure it out? You could probably figure it out in the first 2 days and not even see them do all that much. For example, by how often their superiors agree with what their plan is or whether they even have a plan and just a general air of competence. (R2)
	You learn quickly and get a grasp on the knowledge base of an individual in medicine. It doesn't take long after you talk to someone or have lunch with someone …You realize what they know or don't know. And you get a grasp very quickly of competency, which then tells you how much range you can give someone when it comes to resuscitating a patient. (A8)

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Confidence in Self	I tell my residents all the time, "Whatever you screw up, I can fix." If I could not do that, then I wouldn't let them do it. That's just part of it, if I can't do that, then I can't let them be doing that procedure. So anything that I'm watching them do, I can do better. If you can't do that, then you should be doing something else. (A6)
	Another particular attending not only doesn't want the resident to do it, he doesn't want the fellow to do it. He goes in there and does it himself. Maybe he wants to do it and because he doesn't feel comfortable enough to let someone else do what he is not comfortable with doing himself. (R5)

Table 4: *Enabling Characteristics*

Topic	Evidence
Routines, tradition, and values	We've protocolized a lot of things. We have our way of doing it. There are advantages and disadvantages to that too, but it makes it more clear. So you can say to somebody, "Okay, that may be the way that you do it at the University of Akron, but you're not at the University of Akron. You're here and here's the protocol we use here." There is a little manual that the residents and fellows get which tells them what to do, so that helps to some extent. (A5)
	There's a military structure in surgery where everything has to go through certain channels and God forbid you try to overstep one. (F6)
	As an attending, I try to help transition fellows to an attending status so they recognize… that it is not what I want, it is what the patient needs that is important. Quibble doesn't matter at this point. I can take that to a meeting a week later or whatever. All that matters is the patient. How can I maximize efficiency in patient care? (A4)
Support Staff	The thing that's different about here is that the personnel and the nursing staff have been here for so long and just know the system. They probably could manage most of the things downstairs better than some of the junior residents. (F4)
	We have a lot of autonomy as nurses. We can gently tell the docs what we think. Nurses have more autonomy here than in other areas of the hospital. The nurses are very experienced here and there's usually so much going on that you're left to handle things by yourself. The residents are coming here to learn, but we're here everyday. (N1)
	I think that what is unique about the hospital is that it's a nurse run hospital. From the bottom to the top, the nurses really keep things organized. They make sure everything is done. In an appropriate way and in an appropriate amount of time, make sure everything is done in a pattern. (R10)
Time Awareness	Well, I think if the residents are not getting along, then it's a problem, but like I said, the residents are here for a month or two months at a time. The rest of us live here. We do things the way we do things every day. And they're here for a month and they go back to Iowa or Ohio or wherever they came from. (N2)
	Most of the residents enjoy getting the patients and doing the procedures. But, there's one resident on our team who's been here going on two months. He's just counting down the days. Being on call every third night and staying awake the whole night is pretty challenging. (R5)
	That is a well known prescription for corporate advancement and that is essentially what you are doing here. It is much more regimented here than in the corporate world where you get a promotion every one to five years. Here you have very specific time periods where you know exactly what you are going to be doing a year from now in the next year. (F2)

Figure 1: Impact of patient condition on leadership

		Urgency	
		Low	High
Novelty	Low	Distant, passive monitoring by fellow and/or attending	Close, active monitoring by fellow and/or attending
	High	Teaching by fellow and attending	Active, hands-on leadership by fellow and/or attending

Figure 2: Impact of enabling conditions on the team leadership system
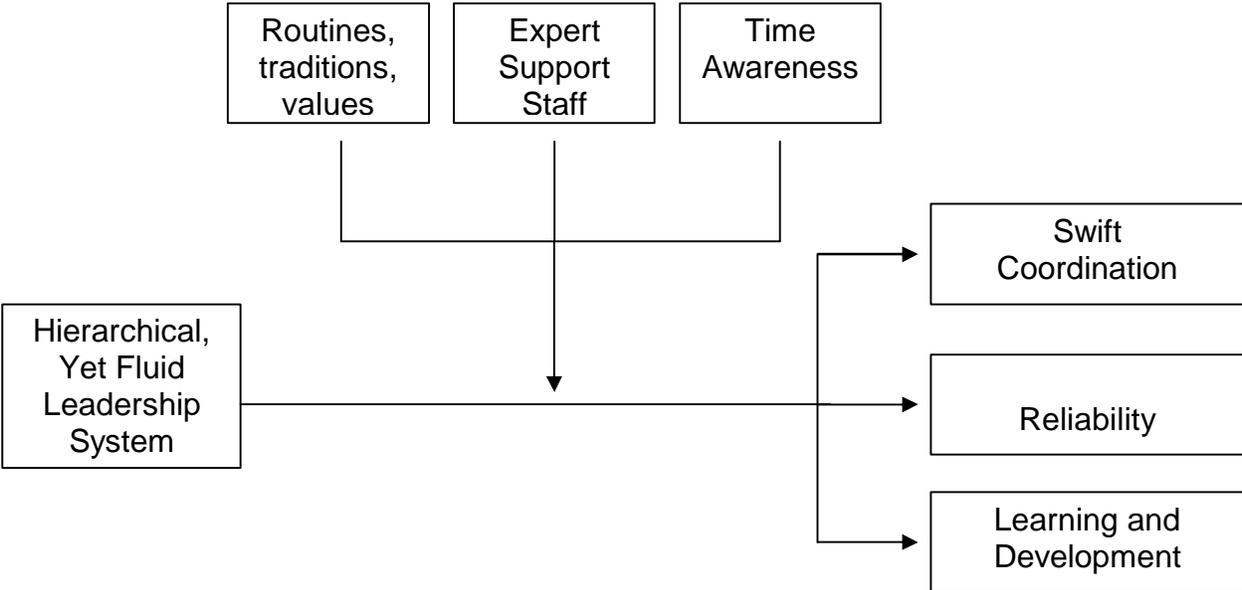
Appendix

TRU LEADERSHIP FINDINGS SUMMARY

? *Who is the leader in the bay?*

? Many potential leaders including the attending surgeon, surgical fellow, resident in charge of the patient, and nurse.

? In general, the attending surgeon, surgical fellow, and resident in charge of the patient enact the leadership roles.

? Leadership among these three individuals is dynamic and fluid.

? *What do leaders do?*

? Six leadership behaviors were identified as being both relatively frequent in occurrence as well as having a substantial impact on treatment:

   ? Provide **strategic direction** to the care providers (e.g. explicitly tells the care providers the overall plan or strategy for treating the patient).

   ? Participate in patient care in a **hands-on** fashion (e.g. physically touches the patient).

   ? **Teach** other care providers to perform specific tasks (e.g. instructs or shows one or more care providers how to perform a specific task).

   ? **Monitor** the care providers (e.g. watches what other care providers are doing to be certain errors are not made in treating the patient).

? *What are the results of leadership?*

   ? Effectiveness

   ? Efficiency

   ? Learning