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RELIABILITY REVISITED: TOWARD AN ENLIGHTENED NOTION OF COMMAND AND CONTROL IN HIGH HAZARD INDUSTRIES

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ABSTRACT

High risk and high reliability organizations found in high hazard industries deserve rigorous scholarly and applied attention as the consequences of failure are often catastrophic. Given the ramifications of poor performance, at best, or failure, at worst, it is surprising that inquiry into these special organizations is rather muted compared to the vast amount of conceptual and empirical study found within the broader organizational theory literature. Moreover, the preponderance of research over the 30 years since the Bhopal gas tragedy has overwhelmingly focused on such domains as organizational learning, network analysis, and organizational/management systems. Ironically, and quite unlike the general organizational theory literature, leadership receives scant attention within the context of high risk/high reliability organizations (HROs). We begin to address this absence by applying some conceptual rigor to the dominant logic and leadership style found in most HROs—the Command and Control persona and approach. We contend that traditional conceptualizations of command and control may, indeed, work against the reliability of HROs. Instead, we offer a more enlightened notion of command and control that, if implemented, should reduce risk and hazard within these unique organizations.

Keywords: Organization Reliability, Leadership, High Hazard Industries

1. INTRODUCTION

High hazard industries contain high risk/high reliability organizations (HROs) that produce considerable social benefits. When operating as expected, HROs provide energy, transport citizens, allow for free flow of trade, and even provide for national defense. Such organizations include but are not limited to nuclear power plants, oil refineries, airlines, investment banks, and aircraft carriers and submarines. Unlike traditional organization archetypes, inherent in the fabric of HROs is their potential to kill or injure considerable numbers of people or destroy wide swaths of the environment (Roberts, 1990). Unfortunately, over the last several decades, breakthrough events such as the Bhopal disaster, the Deepwater Horizon event, and the Chernobyl and Fukushima meltdowns provide ample evidence of the consequences of HROs failing. While much of the research agenda on HROs focuses on such topics as organizational learning, organizational knowledge and cognition, and systems theory, the After Action Reviews of all major mishaps point to an additional failure—that of leadership (Marcus, Bromiley, & Nichols, 1989a; Marcus et al., 1989b; Shrivastava, 1986). In this paper, we offer a critical examination of the dominant leadership logic found in many HROs—Command and Control. Toward that end, we extend the thinking and offer a more nuanced conceptualization of command and control leadership styles that should enable safer and more reliable HROs.

HRO research as a percentage of the entire tome of organizational research is low, despite the outsized impact on society and a variety of stakeholders that occurs when these organizations fail to operate as expected (Roberts, 1990). Even within the realm of HRO research, a disproportionate amount of attention is focused on effectiveness (Cameron & Whetton, 1983; Goodman & Pennings, 1977) without adequate study of this notion of performance reliability (Roberts, 1990). Importantly, reliability, i.e., the ability to perform reliably (and flawlessly) over time, is the primary concern of HRO executives and leaders (Roberts & Bea, 2001). Roberts (1990) also criticizes HRO research as overly journalistic, with scholarly

inquiry retaining some of this journalistic flavor. More specifically, she connotes an *ex post facto* orientation that offers causal reasoning only after an accident occurs. Such attempts to study HROs are understandable, as traditional *a priori* hypothesis-testing approaches are often untenable here. In HRO research, the phenomenon to be predicted is usually organizational failure, and by their very design, HROs fail at an exceedingly low rate. For that reason, much of the HRO research is case-based and qualitative in nature. As a consequence, conceptual clarity and rigor are especially important in theory building surrounding HROs.

2. HIGH RELIABILITY ORGANIZATIONS (HROS)

HROs differ from traditional organizations along several lines. First and foremost, they pose special and unique challenges that make them more difficult to lead and manage (Carroll & Cebon, 1990; Offstein, Kniphuisen, Bichy, & Childers, 2013, 2014; Perin, 1995, 1998). A defining characteristic of HROs is their inherent contradictions, tensions, and paradoxes. For instance, Offstein and colleagues (2014) found that after a major disaster (e.g., Fukushima), HROs, especially poorly performing ones, and sometimes entire industries, face greater regulatory oversight, which adds to organizational complexity. However, this focus on large-scale disasters works against the imperative of detecting simple failure "signals" amidst the "noise," which is critical in avoiding catastrophes (Caroll & Cebon, 1990).

For instance, in many of the major breakthrough events in HRO history, such as the Union Carbide event in Bhopal, India or NASA's Challenger explosion, simple signals were present and readily available, but missed (Carroll & Cebon, 1990; Shrivastava, 1986). Roberts (1990) highlights another paradox. HRO technology is "special and unique" and characterized as advanced and complex, which requires specialized knowledge and understanding.

At the same time, these organizations require significant amounts of coordination and a heedful and collective understanding of how operating subsets fit into the larger whole (Roberts, 1990; Weick & Roberts, 1993). Roberts (1990; 161) captures the contradictory nature of HROs when she remarks that "HROs are characterized by both advanced technology (requiring specialist understanding) and high degrees of interdependence (requiring generalist understanding)."

Again, the key descriptors of HROs would invariably contain the following language: tightly coupled, highly complex technologies, working in changing environments, and influenced by a host of often conflicting human and technical factors (Offstein et al., 2013; 2014; Perrow, 1984; Roberts & Bea, 2001). What is particularly remarkable, though, is that while the technology is complex, it tends to be uniform (Carroll & Cebon, 1990; Offstein et al., 2014).

For instance, nuclear reactor technology, while complex, is consistent across most utilities—even spanning continents. HROs are entirely unlike the high-technology sector that derives its competitive advantage from technology advances and innovation (e.g., Silicon Valley). Differences in performance in HROs, such as oil refineries, nuclear power plants, aircraft carriers, or jet airlines, can be traced to leadership and managerial expertise (Offstein et al., 2014). It is this leadership orientation, in general, and the notion of command and control, in particular, that is the essence of our conceptual inquiry.

3. COMMAND AND CONTROL (C2) ORIGINS

On the surface, it may appear that command and control (C2) is a simplistic notion with a rather straightforward definition. Many legacy definitions and preconceptions of this construct have been popularized in war and action hero movies (Alberts & Hayes, 2006; Ryan, 2006). Despite media portrayals and historical fact and fiction informing understanding of this construct, considerably less empirical research and scholarship is available on the topic. Legitimate authorities on C2 are not many

and those without a strong military orientation are even fewer. This leaves many unanswered questions about the C2 construct. For instance, is C2 leadership a trait-based leadership style or a leadership strategy used in certain situations? Similarly, is C2 continuous, as in "always on," or is it triggered only by certain events? Irrespective of whether C2 is a trait- or state- based leadership posture, can it co-exist with other leadership orientations such as transformational, contingency, situational, and entrepreneurial perspectives or models? In regards to long-held management principles, is C2 the domain of the planning phase or is it situated more in the realm of organizational execution, or can it be found in both?

3.1 Military Roots
Contracted by the United States Department of Defense, scholars Alberts and Hayes (2006) assert that the very ontological roots of C2 are military in nature, begging the question as to whether C2 can be successfully applied to non-military contexts. Some doubts surface in this regard. While scholars such as Alberts and Hayes are likely to contend that the military, itself, is a mega HRO, the military is still quite different from HROs found in the private and civilian sectors. Perhaps an appropriate launch point to best understand these differences is to return to this notion of contradictions, paradoxes, and tensions popularized by Roberts (1990), Offstein and colleagues (2013, 2014), and others.

3.2 HROs versus the Military
Notably, HROs are designed to prevent catastrophes and, ultimately, the loss of life. Any serious injury or loss of life is unacceptable in all HROs. In contrast, military organizations bear one of the most difficult and ultimate of missions—to devise plans and execute operations that could result in death. Even within their own units, some loss of life is tolerated, if not accepted, by military leaders. Reduced to its core, and in the broadest of conceptualizations, the mission of the military, the venue in which C2 is widely encouraged and showcased, is to wage and win all wars, or more tactically, to win battlefield engagements. HROs have a quite different mission and operate with different constraints.

For instance, leaders in HROs must deal with a panoply of stakeholders, including regulators, shareholders, taxpayers, and the public, at large. Not only must leaders guard the safety of their employees, they must also answer to such clarion calls as to protect the environment and the surrounding public, where many utilities, power stations, and investment banks operate.

One could easily contend that the conflicting, competing, and varying stakeholder views introduce tension into HROs not found in other organizations to include military units (Offstein et al., 2013, 2014; Perin, 1998; Perrow, 1984). Put differently, HROs must accommodate powerful and pluralistic voices, internal and external, in their everyday operation. Thus, an open question remains—how well does this notion of C2, often the expected posture of the military, generalize to other organizational environments?

As mentioned previously, empirically researching leadership and organizational behavior in HROs is difficult. Thus, theorizing and rigorous conceptualizing are necessary to produce meaningful insight into these phenomena. Alberts and Hayes (2006) begin by categorizing and defining core planks of C2. One core tenet of C2 is establishing boundary conditions for execution to take place. Alberts and Hayes (2006) also describe C2 as focusing individuals to accomplish a set purpose (e.g., to put the plant in a safe condition).

Assessing the effectiveness of C2 has been problematic in that historically, and, again, from a military perspective, the criterion was whether the mission was accomplished (Alberts & Hayes, 2006). Not surprisingly, this approach highlights another difference between HROs and military units. In HROs, profit-making and production co-exist with the mission of safe operations; therefore, HROs are required to seriously consider efficiency in decision-making (Roberts & Bea, 2001; Shrivastava, 1986). In contrast, efficiency is not, if ever, a prime consideration of military tacticians or strategists (United States Army FM 5-0, Army Planning and Orders Production, 2005).

Alberts and Hayes (2006) provide a nod to the "received" or traditional view of C2, i.e., the form that is probably practiced on a more routine basis. Traditionally, C2 is considered a directive process with a decidedly and firmly held authoritarian leadership style. C2 may also be marked by unity of command (a single individual in charge), the presence of hierarchical relationships characterized by significant power distance, and an explicit understanding of roles, decision-making authority, and control of subordinate behavior (Alberts & Hayes, 2006: 9).

Below, we examine this traditional embrace of C2 as a directive and authoritarian leadership orientation meant to control the situation through condition setting, order-giving, and more autocratic decision-making within the high hazard context. Moreover, we wish to examine this phenomenon at its extremes. For instance, how would or could HROs respond under conditions of heavy, authoritarian C2 leadership? We offer these as assertions only in the hope of generating more sophisticated, nuanced, and detailed debate regarding the interplay of HROs and C2.

4. COMMAND AND CONTROL (C2) AND AUTHORITARIAN LEADERSHIP

When many contemplate the characteristics of execution of C2, they default to an authoritarian leadership world-view (e.g., DeSmet, Schaninger, & Smith, 2014). This is hardly surprising as both the popular press and scholarly research suggest that leaders and followers conflate the two (DeSmet et al., 2014; Rosener, 1990; Ryan, 2006; Tannenbaum & Schmidt, 1958). Typically, C2 is characterized as male, traditional, and executed through formal authority (position power) and the control of resources (rewards and punishments), people, and decision-making in large organizations (Pfeffer, 2003; Rosener, 1990).

Moreover, there is anecdotal evidence suggesting that many leaders who *use* C2, *abuse* it, or are at least perceived as doing so. For instance, leaders who constructively debate the merits of an issue versus attack others' self-concepts in disagreements (Infante & Rancer, 1982), may nonetheless be perceived as threatening or aggressive (Gorden, Infante, & Graham, 1988) by followers.

Early leadership research showed that when organizational members had first-hand experience with total participation in decision-making (including leaders giving up power and followers being responsible for goal setting and methods), they later perceived supervisors who made decisions without it as authoritarian (Tannenbaum & Schmidt, 1958).

4.1 Effects of Extreme C2
At its extremes, C2 can surge beyond the "directive" to a leadership style characterized as abusive (Tepper, 2000), aggressive (Infante & Gorden, 1985), rude (Johnson & Indvik, 201), uncivil (Andersson & Pearson, 1999), or bullying (Lutgen-Sandvik, 2006) in nature. Severely autocratic or aggressive leadership styles have been shown to be correlated with a rash of negative organizational consequences, including lower follower satisfaction (Infante & Gorden, 1985), lower organizational commitment (Infante & Gorden, 1991; Johnson & Indvik, 2001; Pearson, Andersson, & Porath, 2000), higher turnover (Johnson & Indvik, 2001; Lutgen-Sandvik, 2006; Pearson et al., 2000), poorer performance (Johnson & Indvik, 2001; Pearson et al., 2000), lower worker productivity (Johnson & Indvik, 2001; Lutgen-Sandvik, 2006; Pearson et al., 2000), and declines in follower physical and mental health (including anxiety and depression; Coombs & Holladay, 2004; Johnson & Indvik, 2001) and job-related exhaustion (Grandey, Kern, & Frone, 2007).

These health issues, as well as employee fear of future abuse, lead to higher levels of absenteeism and less time spent at work (Hoobler & Swanberg, 2006; Johnson & Indvik, 2001; Pearson et al., 2000). Aggressive leadership is also associated with followers filing lawsuits (Coombs & Holladay, 2004; Johnson & Indvik, 2001) and grievances (e.g., with unions) (Lutgen-Sandvik, 2006) against the leader or organization.

Contrary to assumptions that heavy C2 leadership inspires respect from followers, employees with aggressive supervisors tend to think such supervisors are less competent, have lower ethical character, and care less about followers (Cole & McCroskey, 2003). Aside from damaging followers' perceptions of leaders, overly aggressive C2 leadership styles have also been shown to predict followers behaving antisocially toward leaders.

For instance, when superiors do not treat their subordinates with politeness, dignity, or respect, subordinates are more likely to obstruct the work of their superiors, be aggressive toward them (Chory& Hubbell, 2008), and complain to colleagues (Goodboy, Chory, & Dunleavy, 2008). Bullying, uncivil, and rude leaders induce anger in followers (Johnson & Indvik, 2001), incite or escalate conflict (Andersson & Pearson, 1999), and tend to drive their followers to retaliate against them (Johnson & Indvik, 2001; Lutgen-Sandvik, 2006; Pearson et al., 2000).

Whether leaders are aware or even care about their destructive leadership tendencies seems immaterial; organizational outcomes such as poor firm financial performance are often a by-product of overly aggressive and destructive leaders (Schyns & Hansbrough, 2010). Indeed, negative follower satisfactions, hostile reactions, and poor productivity seem to accompany aggressive, hostile, and subversive leadership (Pearce, & Sims, 2002; Podsakoff & Todor, 1985; Podsakoff, Barman, Todor & Grover, 1982; Thoroughgood, Hunter, & Sawyer, 2011). These negative outcomes impact all organizations. Within HROs, C2 perceived by followers as aggressive or bullying in nature can negatively impact and potently degrade the reliability of HROs.

4.2 HRO-Specific Effects of Extreme C2

The operationalization of abusive and aggressive C2 leadership can take many forms. These include verbal "dress downs" in public and private, humiliation, and threats to job security. Keep in mind that this communicative style need not be yelling or screaming. Rather, research shows that similar effects can be gleaned from leader sarcasm, swearing, rudeness, or aggressive nonverbal behaviors (Andersson & Pearson, 1999; Grandey et al., 2007; Lutgen-Sandvik, 2006). Regardless, leaders that embrace and adopt this leadership orientation invariably create a culture of fear (Ashforth, 1997; Infante & Gorden, 1989; Pfeffer, 2003). This is particularly damning within HROs.

4.2.1 Raising Safety Concerns

Because of the complexity and tight coupling of systems, all employees within HROs are expected to be on the watch for even the smallest deviations from pre-determined mechanical expectations (Roberts & Bea, 2001). When deviations or imperfections are observed (e.g., hearing a steam leak from a valve), HRO employees are expected to raise the concerns, behavior consistent with the primary goal of ensuring safe and reliable operations.

For instance, nuclear power plants, perhaps the most important of all HROs, strive to maintain a Safety Conscious Work Environment (SCWE). Put plainly, a SCWE maintains a culture in which any employee can raise any concern related to safety without fear of reprisal or retaliation. In fact, SCWE documents specifically use phrases such as "free of fear." Thus, when leaders cross the line from C2 leadership to autocratic to aggressive and bullying behaviors, they are likely creating a culture of fear, which, in some cases, may discourage employees from expressing concerns related to plant safety and reliability (Pfeffer, 2003).

4.2.2 Challenging Solutions, the Spiral of Silence, and the Echo Chamber

Government and quasi-government agencies realize that HROs, because of their complexity, tight coupling, and tight interdependence, require a diversity of ideas and solutions to solve mechanical and systems problems (INPO SOER 10-2; Roberts & Bea, 2001). In other words, a workforce comprised of employees with extremely similar mental models is unlikely to anticipate or detect all potential threats to this complicated system. It is unlikely, if not impossible, that a single mental model can offer a singular decision or solution that will work in all cases.

For that reason, HROs are expected to develop and foster a culture in which problem statements and solutions are questioned and challenged (Roberts & Bea, 2001). Again, within the domain of nuclear power plants, there is widespread recognition that the best performing stations apply the highest levels of rigor to challenging possible fixes (INPO SOER 10-2). The value placed on this challenging orientation is so extreme within nuclear power plants that they actually convene "Challenge Boards" to apply courses of action to a ruthless and rigorous challenge.

This questioning and challenging cultural orientation is at risk, however, in the presence of C2 leadership that goes "off the track" towards a bullying or aggressive approach. Even in the best of cases, challenging authority is difficult; it is fraught with trepidation, requires courage, and is a common fear that subordinate leaders deal with. When the authority to be challenged is a bully, these fears are extreme. The research is conclusive in this regard; in the face of a bully, it is the norm for victims and bystanders not to question or challenge the bully since humiliation and retaliation are often deployed at those who take the risk to challenge (Crawford, 1997; Langan-Fox & Sankey, 2007; Lutgen-Sandvik, 2006).

Likewise, followers may publicly affirm a leader's point-of-view, although they believe it to be wrong, just to curry favor or to stay on his/her "good side" (Ashforth, 1997; Langan-Fox & Sankey, 2007). Taken to an extreme, this lack of dissension may create a spiral of silence (Noell-Neumann, 1991) in which employees wrongly assume that others agree with the leader's point of view. When no one speaks up or disagrees with the leader, his/her point of view, however faulty, is perpetuated.

Because of their complexity, HROs fail in the presence of such silence. It tears at the very fabric of HRO reliability. Safe operations of HROs require strong ethics, uncompromising integrity, an essential need for factual information and observations, and a pursuit of the hard fix instead of the "easy answer" (INPO SOER 10-2; Offstein et al., 2014; Roberts, 1990). HROs require rich, diverse, collaborative communication (INPO SOER 10-2; Roberts & Bea, 2001).

Predictably, when authority cannot be questioned or there is agreement based on fear and self-preservation, insular thinking and decision-making tends to dominate. In contrast to a healthy culture in which trust, integrity, and diversity of thought can thrive, this leadership orientation can spur the "Echo Chamber" effect. This phenomenon emerges when the same or similar voices and logic are constantly recycled throughout the organization. In summary, C2 leadership that morphs into or is conflated with bullying and aggressive behavior, inhibits, if not destroys, the questioning and challenging culture that is needed for HROs to effectively function.

4.2.3 Creative Problem-Solving and Brain Drain
In a related vein, the quality of decision-making suffers under aggressive C2 leaders because followers lose their initiative under such circumstances (Ashforth, 1997), withdraw their efforts, and stop using their knowledge to benefit the organization (Pfeffer, 2003). In such situations, HROs miss out on the creative and innovative solutions workers may have otherwise contributed to problem-solving. Talented workers who have been demotivated and disengaged by authoritative C2 leadership are also more likely to exit the organization (Pfeffer, 2003), exacerbating the problem further. In HROs, failure to identify the most effective solutions to problems and make the most informed decisions can result in loss of life.

4.2.4 Self-Preservation and Turning on Team Members
Apart from the lack of questioning, challenging, and creative contribution, abusive C2 leadership also threatens the trust, teamwork, and coordination necessary for HROs to function. With their interdependent and tightly coupled sub-systems, HROs, more than any other organizational type, require an abundance of trust and coordination to avoid accidents and injury (Myers & McPhee, 2006; Robert, 1990; Weick & Roberts, 1993).

Indeed, leading scholars suggest that top performing HROs foster a collective mind that breaks from a "silo" mentality, is expansive, and is rooted in a collegial approach to problem solving (Weick & Roberts,

1993). In contrast, tyrannical, overly controlling leaders foster unpredictable organizational environments (Ashforth, 1997) that tend to encourage suspicion, distrust, competition, and conflict among employees (Langan-Fox & Sankey, 2007). As a result, organizational members become self-interested and focused on self-preservation (Pfeffer, 2003). Empirical research shows that under such conditions, work groups are less cohesive and more fragmented (Ashforth, 1997).

Two ways HRO employees may seek to protect themselves in these uncertain environments are through deflection and blaming, strategies that erode trust among coworkers, break down teamwork, and cultivate an "us" versus "them" environment. Often, the *modus operandi* of followers is to avoid targeting from a bullying leader (Lutgen-Sandvik, 2006). One way to accomplish this is by deflecting, or trying to avoid being held accountable for a certain decision or action.

Because strong accountability cultures in which people "own the problem at the source" are a hallmark of top performing HROs (Roberts, 1990; Roberts & Bea, 2001), any deflection detracts from reliability. A close, but even more damaging correlate of deflection, is blaming (Offstein, 2006; Buell, 2006), or shifting the spotlight from one's own poor performance to another's. Consistent with the motive of self-preservation, employees of aggressive C2 leaders may blame others to protect themselves (Buell, 2006).

4.2.5 Unethically Concealing Problems
While deflection and blaming occur, they pale in comparison to the penultimate destructive force—immoral and unethical behavior. Aggressive, bullying behavior attaches negative consequences (e.g., verbal and physical attacks, public humiliation) to not adhering to performance standards (Namie & Namie, 2000). To avoid these punishing consequences, many subordinate leaders and individual contributors feel compelled to hide or "sweep problems under the rug" to avoid detection by the aggressive leader (Offstein, 2006). When this behavior emerges and fosters an unethical culture, and there have been cases (Offstein, 2006), core and critical processes specific to HROs weaken, putting the entire system at risk. For instance, most HROs maintain a corrective action program designed to catch and fix small problems before they can snowball.

Some industries, such as nuclear, refer to this as PI&R (Problem Identification and Resolution). The logic should be readily accessible. When problems are purposely ignored or inadvertently overlooked, they cannot be addressed, leaving them to balloon into something much bigger (Roberts & Bea, 2001; Perrow, 1984).

The likelihood of developing from a small problem to a much more serious one is very high due to HROs' tightly coupled systems (Roberts, 1990; Roberts & Bea, 2001; Perrow, 1984). Also, the small problems can line up like "holes in Swiss cheese" to lead to a breakthrough event (Roberts & Bea, 2001). For this reason, top performing HROs almost purposefully treat even the smallest problems or the slightest weakening of operational margin as serious issues. When those issues are unethically hidden, the processes, to include the corrective action program, are rendered ineffective.

5. COMMAND AND CONTROL AND "STRONG" LEADERSHIP

Retreating from these extreme scenarios of bullying and aggressive behavior that may co-occur with C2, negative outcomes may still result from the influence of a "strong" leader. Notably, the media and journalistic caricature of many of our current and historical leaders of interest almost invariably point to a very strong command presence (e.g., MacArthur, Patton, Nick Saban, Bobby Knight). Tough, macho, "lean and mean," or hardheaded personalities seem to be an endogenous contributor to a strong command presence and are often perceived as a necessary condition for effective C2 (Pfeffer, 2003). In some sectors, this type of persona may add considerable value. In HROs, however, such boisterous leaders can detract from an organization's reliability posture. We base this assertion along several distinct lines of logic.

5.1 Diverting Employee Attention
First, HROs almost invariably require the use of complex machinery and/or technologies (Perrow, 1984; Roberts, 1990; Roberts & Bea, 2001). One could make a strong case that these organizations are the exemplars of human-technical systems. Put differently, nuanced and superb human interface with mechanical equipment and technology is required for safe and reliable operations. The significance of mechanical systems in HROs is without dispute, evidenced by an overriding emphasis on such metrics and programs relating to equipment reliability (INPO 10-004).

When a strong leader is also charismatic, a cult of personality-type phenomenon emphasizing the singular leader (versus all organizational parts) can develop. It is not implausible to imagine a strong, charismatic leader diverting organizational attention away from the technical and mechanical systems and sub-systems toward himself/herself. When organizational monitoring and trending is levied at a singular leader, as opposed to the complexities of mechanical systems, the risk posture of the entire organization increases.

5.2 Creating Organizational Vulnerability
Second, strong commanders and the concomitant embrace of decisive C2 often means that these leaders enjoy, if not relish, making decisions. Strong C2 is often associated with centralized decision-making by a singular leader (Pfeffer, 2003; Rosener, 1990). Decision-making confined to a sole person is problematic in that it creates a single-point vulnerability in the organization.

In other words, if that leader were to be injured, fall ill, get promoted, or go on vacation, the entire organization would be handicapped, if not paralyzed. In HROs, decisions must be made, often quickly, at the point of mechanical or procedural breakdown (Perrow, 1984). Because a single leader cannot be at all places at all times, especially in the context of complex and tightly coupled HROs, C2 centralized decision-making in HROs can be risky. Decentralized decision-making is recommended instead (Roberts & Bea, 2001).

5.3 Impeding Follower Development
Third, when strong C2 results in more centralized decision-making, junior leaders and other employees do not get day-to-day practice making decisions. The training literature is rife and conclusive; active practice and training is necessary for optimal performance (Klein, 1998; Roberts, 1990). When decentralized leaders are not given the opportunity to practice decision-making, they will lack the capability or skill set and/or the confidence and self-efficacy to make appropriate, timely, and conservative decisions when it matters most. Metaphorically, the weak get weaker when they are not given the opportunity to build a decision-making backbone that would enable them to navigate complex, social, ethical, and political decision-points (Offstein, 2006).

5.4 Disengaging the Workforce
Finally, when strong leaders exercise overly strong C2, the participatory and egalitarian culture can erode. With decision-making and organization prioritization limited to the few or even a single leader, followers can become alienated (Buckingham & Coffman, 1999). The research on alienated followers suggests that cynicism and withdrawal are the common behavioral symptoms (Kelley, 1992).

Predictably, this often begets a lack of effort where elements of the workforce may stop trying, implicitly or explicitly understanding that the sole leader will make the decision anyway (McCaffrey, Faerman, & Hart). This apathetic and disengaged organization is the anathema of all academic and industry research on HROs that demand a highly engaged, intrusive, involved, questioning, and intellectually curious workforce (Weick & Roberts, 1993; INPO SOER 10-2). This is particularly true for HROs where a variety of problems can emerge at any given moment; an engaged workforce helps capture and address these problems quickly and effectively.

6. DISCUSSION AND IMPLICATIONS

From our analysis above, several meaningful themes emerge deserving of more scholarly and applied attention. First, this construct of command and control (C2) is considerably under-researched and conceptualized. Without question, more empirical and theoretical inquiry is needed. Grounding the construct of C2 within a nomological network is difficult.

The validity of the construct is mostly anchored in the military literatures or in the systems/technology arenas (e.g., see Alberts & Hayes, 2006). With thousands, maybe even tens of thousands of academic articles published over the last three decades on the topic of leadership, it appears that the conceptual and empirical "tent" is quite large; there is room for contingency, transactional, transformational, situational, stewardship, entrepreneurial, and trait models of leadership. Surprisingly, C2 is absent in the larger leadership domain. This is particularly troubling given that C2 tends to be the dominant leadership logic within HROs. Given the importance of HROs to a variety of stakeholders, question arises—*should we not know more about C2, its efficacy, and its relation to other leadership models and theories?*

Second, and in an initial response to the question above, we contend that C2 is or could be considerably more than simple directive, authoritarian, domineering leadership. As more dialogue surfaces around this construct, we offer the possibility of enlightened command and control. Interestingly, we borrow from the Stockdale paradox perspective (Collins, 2001), which argues that individuals can hold two competing and conflicting thoughts simultaneously and still act appropriately.

For HROs to remain safe and reliable, enlightened C2 must adhere to the core tenets of the Stockdale paradox. This could take many forms. For instance, enlightened C2 could involve acting decisively while inviting participation. Alternatively, it could look like taking control of a situation while simultaneously questioning the variables that caused or triggered the event and inviting challenge to the variables that may remedy the problem.

Lastly, C2, typically is viewed as a leadership style contained within a singular individual. But what if we could imagine enlightened C2 as jointly shared and executed command and control? We contend that for C2 to be successful in HRO environs, it must allow, and even invite, collaboration and challenge. Put simply, we need to imagine and examine a more expansive view of C2.

Finally, perhaps this notion of enlightened C2 can be trained or built over time. Maybe the launching point is to encourage and legitimize, or even demand, challenge (Infante & Gorden, 1985). The starting point for organizational challenge is probably in the planning and execution of meetings.

This is where dissent and dialogue should be nurtured. In addition to encouraging challenge, HR professionals may wish to recruit and select individuals who are skilled in practicing leadership behaviors consistent with enlightened C2 or have the capacity to successfully learn and implement this leadership style (Avtgis & Chory, 2010). Of course, construct and criterion validity studies of C2 and its measurement are warranted to inform hiring decisions and strategy.

To discount the role of C2 to our collective societal safety would be folly. HRO reliance on C2 leadership is undisputed. However, up for debate is whether it does, indeed, make HROs safer. We offer some propositions to suggest otherwise. C2, especially C2 that is characterized by overly aggressive, directive, punitive characteristics may, in fact, hurt HRO reliability. Toward that end, we urge more scholarship and research on a more expansive notion of command and control—enlightened command and control; the reliability and safety of our HROs may just depend upon it.

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