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**SITUATIONAL AWARENESS:
REFRAMING WITHIN
FIRE SERVICE CULTURE**

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About Christian Regenhard

Christian Michael Otto Regenhard was born on August 25, 1973. He was raised in Co-op City, Bronx, New York. After graduating from the Bronx High School of Science, he served five years in the United States Marine Corps, leaving as a decorated Recon Sergeant. He traveled extensively, often to remote areas of Central and South America, to pursue his love of rock climbing and diverse cultures. After studying language, art and writing at San Francisco State University, he was hired by the Fire Department of New York (FDNY), graduating from probationary school in July 2001. He was assigned to Ladder 131 when he was killed in the collapse of the World Trade Center on September 11, 2001 at age 28.

About the Center

The Christian Regenhard Center for Emergency Response Studies (RaCERS) is an applied research center focused on development of a mix of grounded theory and traditional empirical analysis in the areas of emergency response, coordination of first responders, and dynamics of large-scale incident management and response. The Center is unique in its devotion to first responder-defined and actionable research on policy aspects of emergency response and homeland security from a perspective inclusive of police, fire, and emergency medical services. *Tax deductible donations can be made care of the John Jay College Foundation, 524 West 59 Street, New York, NY 10019.*

About the College

Since its founding in 1964, John Jay College of Criminal Justice has been a leader in the field of public safety, with a diverse variety of academic programs and research capabilities devoted to the study of emergencies and law enforcement organizations such as the fire service, police departments, emergency management offices, and security concerns unequaled by any other academic institution in the United States.

One of the unique aspects of John Jay is its student body. Our students represent a diverse mix reflecting New York, but also the nation and world. Our in-service students include many mid-career emergency responders from virtually every local, state, and federal law enforcement, security, and emergency response organization. As such, we have a unique and long-standing commitment to educating current and future leaders in the emergency response field. John Jay lost over 60 of its alumni, faculty, and students on 9/11. As such, we are uniquely dedicated to enhanced responder safety and effectiveness.

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1.0 OVERVIEW

There is increasing attention being paid to better understanding and consequently decreasing the incidence of on-the-job injuries and deaths within the fire service across North America. Heightening *situational awareness* is being explored as the most critical factor in maintaining the safety of participants in high risk, low frequency events. *Situational awareness* is generally defined as “understanding the current environment and being able to accurately anticipate future problems to enable effective action”.¹ Situational awareness is cited as a critical factor in most research exploring safety in fire suppression activities and in many cases the “No. 1 factor identified by firefighters filing near-miss reports”.² An analysis of 955 near-miss reports highlights that 91% of those reports identified SA as a contributing factor in the *near-miss* event.³ In order for firefighters’ *situational awareness* to be developed it must be understood within the culture of the fire service.

There is some evidence to indicate that some of the more foundational aspects of fire service culture may in fact impede the development of *situational awareness*. In particular, it is critical to explore how the following four dimensions support a more meaningful understanding of *situational awareness*: high-reliability context, hyper-masculine orientation, hero orientation and veteran-centric milieu. Within this type of discussion of *situational awareness* there is an opportunity to develop and evaluate a training and educational model focused on enhancing effective decision-making in high-risk events within and outside the fire service.

2.0 PURPOSE OF THE PROJECT

The purpose of this project was to examine the literature related to *situational awareness* (SA) with a view to understanding how the fire service might better position itself to improve the SA of all of its members. The literature is consistent and explicit in its assertion that SA and its relationship to decision-making are critical components within the fire service context. What is less clear is how the SA of firefighters can be strengthened. This report provides a review of some of the key aspects of the literature exploring SA and the culture within which SA is learned and practiced

3.0 REVIEW OF THE LITERATURE

There is a growing interest in exploring the behaviour of fires, structural changes that contribute to fire dynamics, and various strategies aimed at improving fire literacy. There are some initial research efforts exploring how more robust leadership processes in high-

¹Situational Awareness: What is situational Awareness? Retrieved from <http://eioc.pnnl.gov/research/sitawareness.stm>

²Dubé, R. (2008, January 31). *Situational Awareness Ensures a Safe Operation*. Retrieved from FirefighterNation.

³Pegram, S. (2008). Near-Miss Reports. A Common Theme: Situational Awareness Often Listed As a Contributing Factor In Near-Miss Reports. *FireRescueMagazine*. 26(12).

reliability contexts are challenged by the very culture of firefighting. In regard to SA, there is an overwhelming emphasis on definitional and training statements highlighting its importance in fire suppression activities.

Situational Awareness and Decision-Making

As noted above, SA in the firefighting context is a dynamic process that is characterized by fluidity, rapidly changing circumstances, peril, and high stress. SA has been described as “being aware of everything that’s happening and could happen during your arrival on scene, initial and ongoing size-up, operational period and overhaul and rehab period”.⁴

- SA needs to be understood as an individual experience and skill as well as a collective orientation experienced through *team cognition*.⁵ Integral to attaining this heightened SA for all members on scene is the development and implementation of reliable and robust communication protocols.
- Training is viewed as critical to enhancing the likelihood that SA will be effectively employed, and regained where necessary, in highly fluid, dangerous, and stressful situations.⁶
- Training opportunities must provide for increasing complexity and speed and the insertion of unexpected dimensions in the scenarios exercised.⁷
- Repetition of the same static training scenario increases the proficiency of specific task completion; however, it does not necessarily enhance SA. This finding sheds light on the assertion that I/C firefighters may assume a knowledge based on similar, but not relatable circumstances, and act on that knowledge potentially putting their colleagues at increased risk.
- The use of challenge scenarios, simulators and other technology-based and reality-driven training tools is becoming increasingly critical as real call structural fires are decreasing⁸ and while this is an important avenue to explore, there needs to be a critical review of the unquestioning celebration of repetition that is often associated with technology-based approaches.
- There is a strong relationship between the retention (both in terms of content and length of time information is retained) of the training accrued in these sessions and the level of realism embodied in the scenarios. It is the retention of key information that must be maximized to provide points of reference in future fire calls.

⁴Dubé, R. (2008, January 31). *Situational Awareness Ensures a Safe Operation*. Retrieved from FirefighterNation.

⁵Brennan, C. (2011b). The Link Between Disorientation and Situational Awareness. *Fire Engineering*, 164(6), 79-88.

⁶ Several authors have explored these issues including Baumann, Gohm, and Bonner (2011), Brennan (2011a), Brennan (2011b), Crawford (2008), Dugan (2007a), and Useem, Cook and Sutton (2005).

⁷ Brennan, C. (2011a).

⁸Diehl, D. N. (2008). Improving Situational Awareness in a Fire Structure. *Fire Engineering*, 161(4).

- There is consensus that “fireground tactical decision-making is a complex process that is a synthesis of your experience, your training, your SA, and your comfort level”.⁹ Strategies to achieve this synthesis and consequently improved states of SA are less clear in part because of the challenges presented by the culture of the fire services.

Culture of the Fire Service

There are a number of aspects of SA that need to be framed within a more critical discussion of the culture of fire services. Some of the overarching causal themes associated with injuries and deaths “may actually be tapping the basic culture of firefighting”. Just as a strong SA helps to avoid the tunnel vision that all too quickly can characterize a high-risk event, it is suggested that “a strong cultural paradigm can be equivalent to a set of blinders”¹⁰ and contribute to the direct opposite of SA. This report explores this culture through the lens of four key dimensions: high-reliability context, hyper-masculine orientation, hero orientation, and veteran-centric milieu.

High-Reliability Context

Firefighting as a high-reliability context is a critical piece of the puzzle in discussing situational awareness within the culture of the fire service. Within this context, “two key elements are situational unpredictability and situational danger”.¹¹

- The high threshold of risk that characterizes these communities of service “may be reinforced both externally and internally: externally through the positive public image of firefighters and firefighting and internally through the fire service’s own traditions and member socialization processes”.¹²
- In partial recognition of these socialization processes, there is a need to strengthen the internal policies and procedures that support safety in relation to the establishment and maintenance of SA, sound decision-making and grounded risk/gain assessment.¹³

Hyper-Masculine Orientation

The intersection of a *hyper-masculine* orientation with a *high-reliability* context results in a *normalization of deviance* where “certain risks become so commonplace that their significance is diminished to the point that they are accepted as normal and essentially

⁹Brennan, C. (2011a), 88.

¹⁰Kunadharaju, K., Smith, T.D. and Dejoy, D.M. (2011), 1179.

¹¹Colquitt, J.A., Lepine, J.A., Zapata, C.P. and Wild, R.E. (2012). Trust in Typical and High-Reliability Contexts: Building and Reacting to Trust Among Firefighters. *Academy of Management Journal*, 54(5), 1000.

¹²Kunadharaju, K., Smith, T.D. and Dejoy, D.M. (2011), 1179.

¹³Stehman, P. (2012).

immutable A perilous trajectory”.¹⁴ This relationship between risk assessment and engagement and masculinity is critical to understanding the culture within which the firefighter operates.

- In exploring this relationship between competence and masculinity it has been asserted that “it is primarily through the construction of physical, technical and emotional competence that self-worth is asserted”¹⁵ within the fire service.
- It is important to understand how risk assessment is operationalized in a setting that merges concepts of masculinity and risk-taking and in its most extreme form is exemplified by this excerpt from the Firefighter’s Prayer: “And if according to Your will I have to lose my life, please bless with your Protecting hand, My children and my wife”.

Hero Orientation

It is argued that a key challenge faced by more progressive conceptions of firefighting is to “defeat the hero culture and replace it with one that is safety-centric”.¹⁶ Intrinsic to this challenge is the reality that, “operating with too few resources, compromising certain roles and functions, skipping or short-changing certain operational steps and safeguards, and relying on extreme individual efforts and heroics may reflect the cultural paradigm of firefighting”.¹⁷ This cultural construction of *the way we do things* is a critical component in developing a more complex framing of SA in highly volatile situations.

- In a study that utilized scenario-based assessments of risk orientations it was found that those firefighters that were *primed* as heroes within the context of the study were more likely to express higher risk intentions than those who were *primed* within a public servant orientation.¹⁸ These processes are profoundly important in the recruitment, training and integration of new members by the more experienced and/or veteran members.
- How might some of the language, symbols and customs that ground the hero culture of the fire service contribute to the construction of death and injury as an accepted aspect of the profession?¹⁹

¹⁴Kunadharaju, K., Smith, T.D. and Dejoy, D.M. (2011), 1179.

¹⁵Thurnell-Read, T. and Parker, A. (2008). Men, Masculinities and Firefighting: Occupational Identity, Shop-Floor Culture and Organizational Change. *Emotion, Space and Society*.1, 133.

¹⁶Stehman, P. (2012), 74.

¹⁷Kunadharaju, K., Smith, T.D. and Dejoy, D.M. (2011), 1179.

¹⁸Reinhardt-Klein, J. (2011). Firefighters: Attitudes, Beliefs, and Behaviours that Contribute to High-Risk Behaviours. Dissertation Abstracts International: Section B: Sciences and Engineering. 71.

¹⁹Stehman, P. (2012).

Veteran-Centric Milieu

The *veteran-centric* culture of the fire service is shaped by the expertise orientation and the paramilitary and hierarchical structure of the fire service: “there is no question that experience is the best way to master the art and science of sizing up a situation and making tactical decisions”.²⁰ It is argued that “by valuing members with greater experience, other ways of knowing are subtly undervalued and a cultural assumption that experience leads to expertise is reinforced”.²¹

- In a culture characterized by this orientation, how do firefighters interrupt an error chain in an environment that idealizes hierarchically reinforced tenure-based expertise, particularly as some argue that “in moments of crisis and danger ... leadership may involve more emphasis on questioning and enabling members’ interpretations of volatile situations and less on directing and controlling”?²²
- It has been proposed that “high-reliability teams be trained (a) to recognize the development of epistemic denial in after action reviews in order, (b) to affirm the value of multiple perspectives from team members, and (c) to suppress team tendencies to simplify decisional inputs”.²³
- Most authors agree that progressive training strategies for existing members, who are in many cases long-term members, is often met with resistance.²⁴ This resistance is often passive and characterized by stepping aside during training sessions to provide room for the junior officers. More research needs to be conducted to explore the complex web of factors that might explain this pattern of engagement.
- While “fewer than 10% of the calls firefighters receive may call for an emergency response”²⁵ it is impossible to eliminate, and in many cases even reduce the ambiguity present in these emergency circumstances. Instead, what is needed is a leadership structure and personnel that are highly and reliably skilled at organizing the ambiguity that is necessarily present in these situations.

²⁰Brennan, C. (2011a), 81.

²¹Minei, E. and Bisel, R. (2013). Negotiating the Meaning of Team Expertise: A Firefighter Team’s Epistemic Denial. *44*(1), 19.

²²Baran, B. E., and Scott, C. W. (2010). Organizing Ambiguity: A Grounded Theory of Leadership and Sense Making Within Dangerous Contexts. *Military Psychology*, *22*(1), s45.

²³Minei, E. and Bisel, R. (2013), 27.

²⁴Brennan, C. (2011a).

²⁵Colquitt, J.A., Lepine, J.A., Zapata, C.P. and Wild, R.E. (2012). Trust in Typical and High-Reliability Contexts: Building and Reacting to Trust Among Firefighters. *Academy of Management Journal*, *54*(5), 1000.

4.0 CONCLUSION

Clearly, the high-reliability context of firefighting which is part of a culture that is hyper-masculine, veteran-centric, and celebrates a hero orientation shapes the milieu of safety within which SA is understood, trained and practiced. This cultural reality has to be used to frame the discussion of SA as a critical feature of safety as a “general principle [that] has been demonstrated in more than 200 studies across a multitude of countries and industries that have concluded that safety climate is a robust predictor of safety outcomes, such as injuries”.²⁶ Despite these consistent findings, there appears to be persistent incongruence between the conversations about safety, the precursors to that safety, and the actual practice that is so entangled with the cultural imperatives of the fire service.

It is our contention that using this review as the foundation for future research and professional development would contribute to ensuring that the Surrey Fire Service is at the cutting edge with respect to SA training and consequently the fostering of a culture that exalts safety as the department’s organizing principle.

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²⁶Preventing Firefighter Injuries and Casualties by Examining the Culture of Safety. (2012). Retrieved from www.drexel.edu/now/newsmedia/releases/archive/2012/october/firefighter-safety-culture-research/

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