

Review Article - history

The Development of an Organizational Safety Culture in the United States Forest Service

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Abstract

For over 100 years, the US Forest Service (USFS) has developed initiatives to improve safety outcomes. Herein we discuss the engineered solutions used from 1910 through 1994, when the agency relied on physical science to address the hazards of wildland fire suppression. We then interpret safety initiatives of the subsequent 25 years, as the USFS incorporated social science perspectives both into its understanding of emergency fire incidents and its mitigation of vulnerabilities across all fields of work. Tracing the safety programs using a historical sociology approach, we identify, within the agency's narrative, three recent developments in its organizational safety culture: cultural awareness, cultural management, and cultural reorganization. This article describes how the development of top-down safety initiatives are questioned and shaped by employees who actively influence the trajectory of a safety culture in the USFS.

Study Implications: Safety is a core value of the US Forest Service (USFS), and several safety initiatives, along with employee feedback over the years, have shaped the organizational culture of the agency. To build a robust and world-renowned safety culture in high-risk industries, managers require an understanding of the origins of their organization's current safety culture. Using a critical social science analytical lens, we discuss how safety initiatives and the development of a safety culture position organizations such as the USFS to move away from reactionary safety initiatives and anchor to employee safety as a core value in order to absorb external shocks, such as rapidly changing ecosystems, development in the wildland urban interface, and larger and more intense wildfires.

Keywords: US Forest Service, organizational culture, safety, organizational learning, wildland fire

This article identifies the trajectory of safety initiatives and the development of safety culture in the United States Forest Service (USFS) by using a historical sociological approach. Safety culture in the USFS is rooted in over 100 years of combatting wild-fire and mitigating the risk of firefighter injuries and fatalities. Wildland fire safety interventions by land-management agencies were often formulated in reaction to tragedy fires, and attempts to streamline

guidance revealed some unfortunate features of safety programming as “scattered, redundant, and in some ways, ambiguous” (Withen 2005, p.3). In 1995, the USFS began promoting safety initiatives based on human behaviors and social interactions, first within the wildland-fire sector and later across the agency more broadly (Putnam 1995, TriData 1996, Weick 1996). Although previous efforts had informed these contemporary safety initiatives, the focus of each was

notably distinct. Some were carried out by USFS regions autonomously from the Washington office headquarters. Others were conducted with very little debriefing of employees regarding lessons learned during significant fire events or changes made afterwards. This decentralization and frequent rebranding of safety initiatives likely contributed to employees seeing the initiatives as disconnected, haphazard, top-down measures that shifted with changes in organizational leadership (Ghimire et al. 2016). Employees raised important questions about safety programming: where do these USFS safety initiatives originate? Are they singular efforts created through the Washington office, or are they part of well-conceived collaborations developed over the years?

The USFS is responsible for the management of 193 million acres (78 million hectares) of federal land across 43 states, Puerto Rico, and the US Virgin Islands (USDA FS 2018). Its mission to “sustain the health, diversity, and productivity of the Nation’s forests and grasslands to meet the needs of present and future generations” is carried out by a workforce of approximately 30,000 employees and thousands of affiliates and volunteers (USDA FS 2019). Agency employees work in professional fields ranging from the management of forests and rangelands, wildland fire, timber production, and public recreation to the care of ecosystems, wildlife, and community interests, and business administration, law enforcement, and research. The vast mission and agency workforce are strained by the demands of wildfire suppression, the costs of which have increased from 16% of the agency’s budget in 1995 to 61% by 2016 (Calkin et al. 2005, USDA FS 2015, Hoover and Lindsay 2017, Schultz et al. 2019). Risk behavior in the wildland-firefighting system contributes to these costs, fiscally and socially, and is exacerbated by the conjunction of economic incentives with ecological instability (Burton 2018).

Research regarding organizational safety culture emerged in the mid-1980s with studies of large-scale disasters in energy, transportation, health care, and other high-risk industries (Fleming et al. 2018). Beginning in 2005, scholarship on safety culture grew exponentially (Bisbey et al. 2019), and over time, researchers were compelled to create a consolidated definition of safety culture: “a system of shared meaning about risk and safety, which produces accepted ways of acting (often unquestioned) and viewing safety,” regardless of actual outcomes (Fleming et al. 2018, pp. 6–7). When safety culture has been studied through the perspective of organizational psychology or applied

through business management, the concerns broadly regard the functions of safety culture, the production of acceptable safety outcomes, and the managed improvement of work performance. Historical sociological approaches, by contrast, see safety cultures as emerging over time, through the collective experiences of their members, and as comparatively resistant to manipulation, intervention, or management (Wiegmann et al. 2004). They are nonetheless malleable from the bottom up and may be sustained or changed incrementally by employees who enact and reconstruct safety values every day (Bisbey et al. 2019). Additionally, an organizational safety culture may bear characteristics of the greater national cultures in which employees are invested (Yorio, Edwards, and Hoeneveld 2019) and within trends of global economic and ecological histories (Turk 2018).

Primarily using organizational psychology and business management perspectives, the USFS developed safety initiatives in reaction both to sporadic mass casualty events and the ongoing hazards of daily work. Because many employees experienced these reactive initiatives as “scattered” and disconnected (Withen 2005), we offer a chrono-thematic account. Historical sociology allows us to chronicle the implementation of safety initiatives and explain the emergence of safety culture in the agency over time. This approach recognizes that the underlying meanings of cultural change in the USFS exist in the broader context of the national safety discourse (Abbott 1992). A historical sociological approach also examines the interconnectedness of human agency and social structure—a tension between individual actions and social constraint—that develops through significant events over time (Aminzade 1992, Sewell 1992, Griffin 1993, Gotham and Staples 1996). Moreover, rather than explaining events as independent snapshots fixed in time, a historical sociological approach explains events as cascading from one event to another, wherein “complex actors capture complex structures” (Abbott 1991, p. 227). Historical sociology accommodates undetermined change, observing both the patterns and the deviations whereby people navigate or redraw social structures, with some paths taken and others abandoned. Change takes the form of “an unfolding, open-ended story fraught with conjunctures and contingency, where what happens, an action, in fact happens because of its order and position in the story” (Griffin 1993, p. 1,099). Thus, we trace the meaning, sequence, and contingency of safety initiatives, as they are interconnected with policy and human actions,

to tell the story of how the USFS developed a safety culture.

Our identification of the trajectory of USFS safety culture was an iterative process. To orient ourselves to the agency's concept of safety, we first conducted a purposive sampling of USFS reports on its most recent and regularized safety program efforts between 2011 and 2017 (Ghimire and Cordell 2014, Lane et al. 2014, Flores and Haire 2016, Ghimire et al. 2016). These reports identified additional initiatives and studies that enhanced our understanding of the origins of agency-wide safety-program design (Putnam 1995, TriData 1996, Dialogos 2007). The compilation of reports was diagnostic (exploratory studies of safety culture and workplace environment), evaluative (studies to assess outcomes of safety initiatives), and included a variety of product types: USFS general technical reports, commissioned research studies, preliminary reports, and internal memos. We found supplementary context for the safety initiatives through position papers and conference proceedings of professional organizations, US Department of Agriculture and congressional reports, and peer-reviewed research articles that examined the need for and efficacy of these initiatives. Second, we assembled a chronological annotated bibliography of these products. This allowed us to examine them for moments of continuity and change in concepts of safety, identify how the implementation of safety initiatives progressed over time, and discover junctures at which the agency advanced its organizational approach to safety. Third, although safety initiatives and safety studies in the USFS exist within a greater history, as noted in the following assessment of the agency's safety efforts prior to 1995, we focused this account on their development within the context of cultural change in the wildland-fire system and throughout the agency as a whole from 1995 onward. This approach encourages understanding of how the agency began to construct a safety culture informed by organizational psychology and how it moved away from reactionary safety initiatives toward a more orchestrated development of employee safety promotion.

A Background of Engineered Solutions (1910–1994)

Throughout the agency's history, trauma from turnover incidents in which wildfire has overtaken personnel on the fireline has motivated the USFS to investigate the causes and consequences of wildland firefighting incidents (Pyne et al. 1996). The experience of

the 1910 Big Blowup fires that killed 85 people and burned three million acres awakened the USFS to fire as a fundamental factor in the practice of scientific forestry; its handling became crucial to the organization's mission (USDA FS 1905, DuBois 1914, Pyne 2015). In response to these devastating fires, the USFS launched the development of wildland fire research for *engineered solutions*, both for the control of wildfire and for keeping firefighters and the public safe (Pyne 2015). The agency built a cadre of fire managers and scientists dedicated to learning the best methods for fire prevention, such as the mitigation of fuel hazards and control of fire areas, and suppression techniques for extinguishing fires in America's forests. Fire prevention efforts quickly lost favor in the fire-prone West, however, and a social and political preference for complete fire suppression became clear after 1910. The desire for fire control was also part of a Western frontier mentality, in which urban development during the early 1900s exposed workers, the public, and the environment to the effects of dangerous work, including fire work (Turk 2018). Meanwhile, the USFS considered wildfire on forest reserves to be a net loss for timber production (Smith 2017). In an era when workers were legally beholden to assume risk, economic interests outweighed firefighter health and safety. In the wake of the 1910 fires, the USFS supported complete fire suppression and rejected alternative forest management practices (Schiff 1966).

Pyne has hypothesized that immediately after the 1910 Big Burn, the nonmilitary but nonetheless "martial spirit" of hardiness and valor seized wildland firefighting, making it "a moral equivalent of war itself" (Pyne 1982, p. 237). Thirty years later, the events of World War II solidified a war paradigm of fighting wildfire, both real and imagined. The dramatic threat of Japan dropping incendiary bombs on forests along the West Coast to create massive wildfires (and the actual mass fires already weaponized by the US in Germany and Japan) stoked the militarism of firefighting. In the post-war period, veterans returned from the battlefield, further infusing the ranks of the USFS with a culture of discipline, hierarchy, and cohesion. Their efforts and organization, in addition to the establishment of fire science for wartime bombing campaigns, demonstrated the "remarkable resemblance between war and forest fire control" (Bradner 1945, p.1, Fox 2017, Smith 2017). The USFS believed that the battle against wildland fire could be won with overwhelming force using science, technology, and most importantly, firefighters on the ground. This,

along with the “creation and maintenance of a hegemonic militarized masculinity that emerged in and across U.S. institutions” during WWII (Jarvis 2004, p.8), cemented in the USFS what historians have interpreted as a powerful “can-do” culture (Pyne 1982). Moreover, within a broader societal context following WWII, strong, youthful, white male risk-taking occupations also symbolized American dominance and its “rising status as a world power” (Jarvis 2004, p.4). However, as we describe below, prioritizing a so-called can-do attitude of defeating wildfires also had the unintended consequence of suppressing safety (Weick 1996, Dunskey et al. 2005, Desmond 2008, Pyne 2015).

A notable rethinking of the war metaphor occurred after the 1949 Mann Gulch fire near Helena, Montana. Burning thousands of acres and propelled by high winds in hot, dry conditions over steep terrain, the fire killed 12 smokejumpers and a local fire guard (Pyne 2015). Findings from the investigative report led to greater urgency in developing research toward “a better understanding of indicators of fire behavior” and for fast, efficient, and safe firefighting (Hanson 1949, p. 7, Barrows 1951). The USFS established state-of-the-art fire laboratories in the late 1950s and early 1960s in Macon, Georgia; Missoula, Montana; and Riverside, California, where researchers used physics and engineering to better predict and control fire behavior (Pyne 2015). In addition, the labs engaged in product development of fire shelters, gloves, and other personal protective equipment for firefighters. Although the war mentality and its associated motivation of dominating nature persisted, a correlative paradigm of fire science emerged after Mann Gulch with the aim of advancing firefighter safety and eliminating fatal entrapments.

Yet entrapments and fatalities continued during this period of engineered solutions and spurred thorough reviews of the agency’s practices. The 11 deaths in the Inaja fire of 1956 prompted a meta-study of the previous 20 years of wildland fire fatalities—the first of three early meta-reviews (USDA FS 1957, 1967, NWCG 1980). Although it prioritized research on fire conditions, the study also located precursors for what would later be identified as human factors, such as weaknesses in planning, leadership, and the interpretation and communication of fire behavior (USDA FS 1957). It also called for structural reform by centralizing the organization and cultural reform through standardizing fire operations. The 1957 study also cited employee resistance: previous safety guidance issued in 1953 never gained traction with firefighters.

A decade later, the 12 fatalities of the Loop fire precipitated a second fatality meta-review. Again, most of the post-Loop recommendations advocated the advancement of physical science but also recommended the application of technical knowledge in firefighter training. This report, too, noted cultural issues in wildland fire, including continued resistance to the centralization of knowledge, resources, and authority—described as a failure to institutionalize “what we already know and what we already have” (USDA FS 1967, p. 2).

Authors of the third meta-review escalated their tone after 15 wildland fire fatalities occurred in 1979 and demonstrated exasperation with the organizational inertia of firefighting:

Numerous fire safety studies, reports, and analyses dating back to the mid-1950s were reviewed during the course of this study. IT IS SIGNIFICANT TO NOTE THAT MANY OF THE SAME ISSUES THAT EMERGED FROM THIS STUDY WERE ALSO FOUND REPEATEDLY IN THOSE PREVIOUS INVESTIGATIONS. Part of the problem, then, appears to be incomplete implementation of previous study recommendations. (NWCG 1980, p. 8, emphasis original).

In this 1980 fatality review, the multiagency task force departed from the wartime hero model by presenting a safety-first philosophy and advocating a no-fault ethic. They broke from the position of fire leaders at the time who were saddled with an older pattern of determining the legal and financial liability of individuals. The task force was responsive to the directives of the Occupational Safety and Health Administration (OSHA) to protect employees. Reaching beyond operational strategies, their discussion of “human behavior” inched toward cultural issues of safety. The report described a wildland fire culture of invincibility with an “unquestioning acceptance that ‘firefighting is a dangerous business’” (NWCG 1980, p. 17). Firefighters cohered around the value of hard work, the status of seniority, and the rewards of job security. This created at all levels in the wildland fire community a reluctance to impose accountability for safety upon an “old boys club” in “strategic places” across the organization (Laybourn 2019, p. 1). Calling one another on safety infractions was seen not only as personally damaging; it could erode an entire profession, exacerbating what was “already considered to be a waning interest in fire work” (NWCG 1980, p.50). Moving from how work was done to why work was done, the 1980 meta-study put together the motivational paradox of safety culture

in wildland fire: effective safety in the job often competed with efficient productivity on the job.

Suggesting a broader scientific rationale was possible, the 1980 task force promoted a multidisciplinary inquiry into “all cause-effect relationships from which practical corrective actions can be derived” (NWCG 1980, p.4, emphasis original). However, contemporary efforts by the USFS to understand the changed “physical, social, economic, and organizational environment” in wildland firefighting did not begin in earnest until after 1994, a challenging year of increased firefighter fatalities and diminished returns on suppression costs (USDA FS 1995, p. 2).

Cultural Awareness (1995–2004)

The loss of 14 firefighters in the 1994 South Canyon fire was a particularly deafening wake-up call that made the USFS acknowledge the dynamic complexity of the human dimensions of organizational safety. We refer to the awakening after South Canyon as a period of *cultural awareness*, during which the previous focus on safety through fire operations and fire behavior became enhanced by social science perspectives, and inquiries into wildland firefighting fatalities took a cue from the 1980 meta-review to replace questions of how with explanations of why. We sketch this period from 1995 through 2004 in two subsections that include four landmark documents of workshops and research conducted by organizational psychologists and public safety consultants.

The Wildland Firefighters Human Factors Workshop and Safety Awareness Study

Wildland fire smokejumper-turned-psychologist Ted Putnam publicly questioned the engineered-solutions approach to safety, which sought to explain fatality and injury through the lens of fire science. Technical failures predominated in the investigation reports of the South Canyon fire, as did “plain indifference” to the safety of employees (US Department of Labor 1995, p. 12). Putnam argued that internal factors such as “stress, fear, and panic combine to erode rational thinking” on the fire line (Putnam 1995, p. 54), despite operational planning and cutting-edge gear. However, the USFS and wildland fire community had done little to understand how human thinking, leadership, and crew interactions impacted decision making. Although fire science advanced knowledge of the external factors affecting wildfire suppression, it did not include human factors like individual psychology or social interaction,

which contributed significantly to wildland-fire fatalities. Putnam therefore pushed for taking actionable steps on earlier meta-review recommendations to examine human behavior and cultural issues of safety. (Putnam 1995).

In June 1995, Putnam organized the Wildland Firefighters Human Factors Workshop, hosted by the USFS Missoula Technology and Development Center. For the first time, the examination of human variables took center stage, redirecting inquiry toward the social relationships and culture in the fire community. Among the many accomplished workshop participants was organizational psychologist Karl Weick, who was known for his study of the organizational breakdown and human factors that contributed to mass fatalities during the 1949 Mann Gulch fire (Weick 1993). Weick pointed out disturbing similarities between the Mann Gulch and South Canyon fires. Although 45 years apart, the firefighters in each incident divulged relevant interpersonal and emotional experiences: inadequate briefings, uncertainty about leadership, physical and symbolic resistance to dropping their tools in order to escape, and a reluctance to acknowledge the unknown (Weick 1996). Although firefighters recognized the significance of these issues during the incidents, no one on the crew bucked authority or refused to engage the fire. No one admitted that they had lost control of the situation, because a loss of control or admission of failure was taboo in Weick’s (1996) hypothesis of a can-do culture in the wildland fire organization. Moreover, the social stigma of saying no to an assignment was seen as a character flaw of the individual firefighter rather than attributed to a managerial misstep or an organizational gap.

Consequently, the federal agencies responsible for managing wildfire sponsored the first major federal study of the human dimensions of wildland fire. The Wildland Firefighter Safety Awareness Study (WFSAS) collected data from wildland fire professionals, including input from more than 100 interviewees, a dozen focus groups, and more than 700 survey respondents. The multiphase study was designed to identify the organizational culture and human factors impacting firefighter safety (TriData 1996), help determine organizational goals toward improving the safety culture (TriData 1997), and assist in the implementation of those cultural changes (TriData 1998). As a result, programs for communicating safety information were established in the late 1990s and early 2000s. These included the development of an improved ethic of communicating and managing risk through Crew

Resource Management efforts and the Wildland Fire Leadership Development Program; a system for confidentially reporting incidents and accidents, known as SAFENET; and the Wildland Fire Lessons Learned Center, a repository for incident education.

These systemic changes in wildland fire were still tied to the engineered-solutions ethic of individual savvy, which advocated “individual responsibility, training and qualifications, strategy and tactics, and personal protective clothing and equipment” (Mangan 1999, p. 17). Nonetheless, subsequent assessments revealed that the post-WFSAS attention to human factors of leadership training, nonpunitive reporting, and decision-making were associated with successful reductions in fire entrapment fatalities (Loveless and Hernandez 2015).

Safety and Health from the Field and the USFS as a High Reliability Organization

A View of Safety and Health from the Field was the first study to ask both USFS fire and nonfire personnel about the “prevailing safety ‘culture’” (TriData 2003, p. 2). Employees who participated in the study stated that they lacked training in identifying and evaluating hazards and using specialty equipment and often did not use even the most basic personal protective equipment or seat belts. One-third of employees did not conform to work-rest guidelines, and carelessness and fatigue were the most frequently cited factors contributing to injuries. Solitary work, night work, and working without a radio were extremely common, and their combination contributed to the “greatest concern voiced by employees...that of being alone and having an accident” (p. iii). In addition, employees thought health and safety conditions were affected by the structural issue of a decreased budget with an increased workload. They reiterated tensions between safety and productivity that the 1980 fatality meta-review previously identified.

The reduction in employees is causing the remaining ones to increase their workload and geographic areas of responsibility, which sometimes is leading to cutting safety corners to get the job done (TriData 2003, pp. iii-iv).

Broadening organizational perspectives on safety, the USFS and Department of Interior convened a workshop in 2004 along with external stakeholders on managing unexpected consequences during prescribed fires. Participants embraced the idea of the High Reliability Organization (HRO) cultivating awareness

of “things that disconfirm, are unpleasant, feel uncertain, seem impossible, are implicit—and are *contested*” (Keller 2004, p. 17, emphasis original). Rather than operational recommendations, the workshop organizers tutored participants in processes that generate the mentality, or mindfulness, of an HRO: (1) scrutinize work systems for small failures, because they illuminate where catastrophic failures might begin; (2) resist simple solutions that reduce complexity and employ diverse perspectives instead; (3) maintain immediate situational awareness and communicate it in order to build a predictive or anticipatory capacity; (4) increase resilience among employees to improvise with resources at hand; and (5) locate expertise in the appropriate individuals, regardless of the hierarchy of authority.

The rationale was that mindfulness created a capacity to discover and manage unexpected events, ultimately producing a reliable sensitivity for determining safer operations (Weick 1995). Furthermore, several other elements should coexist in an informed HRO culture: transparency in reporting, a just distribution of responsibility, flexibility to stressors and elements of change, and a disposition for active learning. HROs were understood to preempt catastrophe by bringing errors into the open and dealing with them creatively from all levels, as opposed to suppressing them.

In the decade that followed the development of the agency’s cultural awareness of the social aspects of safety, the USFS moved towards embedding that awareness in its management practices.

Cultural Management (2005–2015)

Cultural management describes a significant shift from safety initiatives focused solely on fighting wildfire to national initiatives that included the normal work environment of nonfire personnel and organizational learning across the entire USFS workforce. Senior leaders in the agency, advised by a global management consultancy, adopted a model called the Safety Journey and employed it in agencywide sessions. The primary realization for the USFS during these years was: “our safety record is not just about safety—it is about literally everything we do, and how we do it” (Kimbrell 2007, p. 1). The USFS focused on identifying the foundational values that generated unwanted and unanticipated outcomes in order to transform the organizational safety culture of the entire agency. It attempted to modify those values in a process of self-discovery; that is, of organizational learning.

Integrating Mission Accomplishment with Safety at the US Forest Service

An ideological and cultural shift took shape in the interagency wildland fire system and began to permeate across the USFS in the mid-2000s, as the Washington office reframed wildland fire management in a larger social-ecological context. With a rise in USFS employee deaths during 2005, senior leaders in the agency were eager to identify the systemic and cultural changes required to reduce incidents in fire and nonfire work environments.

In 2006, Chief Bosworth issued a statement regarding the wildland fire policy reform entitled “Fire Suppression Foundational Doctrine.” Authors of the reform made a case for correcting the proliferation of policies and procedures enacted since the South Canyon fire. They endorsed a more general guiding philosophy (Bosworth 2006). The fire doctrine envisioned a culture of HRO values, a culture of integrity and flexible judgment capable of accomplishing the “agency mission while minimizing exposure to hazards” and fostering “a work environment that is enjoyable, rewarding, recognizes the value of diversity, and is free of harassment” (USDA FS 2005, p. 3). Meanwhile, a parallel discourse regarding safety and the defense of work was intensifying among USFS employees, reflected in an agencywide safety culture study:

If community members speak openly and straight about difficult issues, for instance hazards in safety-related situations, they may be misunderstood, be perceived as disloyal, become ostracized, and run the risk of being held legally accountable. At the same time, the failure to bring out issues raises issues of personal integrity and responsibility, and likely insures [sic] that fragmentation and error will persist. (Dialogos 2007, p. 6)

This paradox of safety accountability was an organizational “catch-22” for employees who attempted to meet the rigors of work, not by cutting corners but by developing creative workarounds in safety practices. These HRO-type “improvisations” inadvertently perpetuated situations where “things end up working in spite of organization-wide difficulties” (Dialogos 2007, p. 1). The USFS was still characterized by what researchers have argued is a can-do culture in the organization that “seems to make matters worse as people work harder and harder to satisfy demands, but never seem quite able to keep up” (p. 6). In turn, senior management attempted to address these capacity challenges by adding rules and rote procedures. These often had the unintended effect of diminishing critical thinking, contrary to the HRO precept of avoiding simple solutions.

Table 1. Landmark documents in the development of USFS safety programming

	Precipitating event	Event date	Resulting document	Publication date
Cultural Awareness	South Canyon fire	1994	<i>Findings From the Wildland Firefighters Human Factors Workshop</i>	1995
	Human Factors workshop	1995	<i>Wildland Firefighter Safety Awareness Study</i>	1996–98
	Camuesa incident	1999	<i>A View of Safety and Health from the Field</i>	2003
	Cerro Grande fire	2000	<i>Managing the Unexpected in Prescribed Fire and Fire Use Operations</i>	2004
Cultural Management	Fire doctrine	2005	<i>Integrating Mission Accomplishment with Safety at the US Forest Service</i>	2007
	Safety Journey	2011	<i>The Forest Service Safety Survey</i>	2014
	Safety Journey	2013	<i>Preliminary Report on the 2013 Forest Service Safety Survey</i>	2014
Cultural Reorganization	Safety Journey	2015	<i>2015 Forest Service All-Employee Safety Survey</i>	2016
	Life First	2016	<i>Life First: An Exploration of the 2016 Wildland Fire National Engagements Sessions</i>	2016
	Life Work	2017	<i>Life-Work Dialogue Participant Survey – Work Group Dialogues</i>	2017
	Stand Up for Each Other	2018	<i>This Is Who We Are</i>	2019
	WEPO charter	2019	<i>2019 National Work Environment Assessment</i>	pending

The Forest Service Safety Journey

In 2011, the USFS implemented group dialogues in which employees in all work areas across the agency were required to join day-long conversations with their leaders. Known as the Safety Journey, this initiative was a way to elevate “safety consciousness and practice” for all USFS personnel in both fire and nonfire positions (Lane et al. 2014, p. iv). According to one source, the dialogues “reinforced the perception of safety as a core value rather than as a ‘program,’ introduced new practices and tools for risk management and learning and gathered input and feedback from employees” (Dialogos 2020, web page). Such cultural changes to processing, communicating, and taking decisive action—that is, thinking, talking, and acting—would inform future programs.

In the followup evaluation survey, fire and nonfire employees identified key safety concerns. Employees provided open-response comments for improving safety in the USFS that, when summarized into 10 recommendations by the survey analysts, included now familiar requests: “1. Reduce workloads; [and] 2. Revise target-based funding so that employees are not tempted to cut safety corners in order to meet targets in the face of reduced personnel and budgets” (Lane et al. 2014, p. 40). Other suggestions advocated employee mentorship, hiring more and fully qualified employees, reinforcing anonymous access to safety violation reporting, and acknowledgment of good safety records. Employees also suggested modifying future safety programs to include topics such as office workers’ health, wellness, and fitness; and emphasizing risk management rather than rules-based safety, which was in line with the 2005 Fire Doctrine.

Throughout 2012 and 2013, USFS leadership undertook the second iteration of the Safety Journey, engaging agency employees in another round of group dialogues. Their conversations continued the process of shifting from a rules-based to a values-based safety culture and improving how work was accomplished (Ghimire and Cordell 2014).

The third Safety Journey in 2015 focused on personal and organizational resilience and managing the stress of the workload-safety balance. The USFS designed these sessions to develop a shared vision of safety, elaborated in the statement “We actively care for the safety of ourselves, one another, and the public. Success is safely achieving our mission—with all of us returning home every day” (Ghimire et al. 2016, p.4). Groupings of employee support for the Safety Journey are comparable over the years (see Table 2.) Supportive

group members were the most apt to agree that safety was a top priority for the USFS; they felt supported by managers and did not feel expected to cut corners in safety. Somewhat supportive group members reported that the engagements were temporary efforts, and the skeptical group indicated comparatively negative attitudes regarding the Safety Journey. Survey findings indicate that ambivalence toward the Safety Journey grew substantially from 2011 to 2015. Employee attitudes toward the Safety Journey tempered over time, from both extremes, into something more lukewarm.

Although some resistance by employees to the Safety Journey remained throughout its three iterations, the Safety Journey demonstrated that a discursive engagement format, conducted in local settings and tailored to different work units, could help to identify specific issues that needed attention, especially rewards, reprimands, and workload. In the following years, the Safety Journey morphed into safety engagement sessions and a cultural reorganization of the USFS.

Cultural Reorganization (2016–2020)

USFS safety programming reached a transition period of *cultural reorganization* during 2016–2020. During this time, the USFS promoted critical thinking and speaking, inviting a reversal of the lingering hierarchical command that historically characterized the agency. Exercises in interpersonal communication emboldened some employees to engage in frank discussions of workplace misconduct, including harassment. Larger forces also influenced cultural reorganization, including the global watershed of the #MeToo movement and subsequent pressure from Congress for reform. In addition to experiencing changes in information flow and volume, senior leadership unified various safety and well-being programs under the

Table 2. Employee support of the Safety Journey

Survey year	2011	2013	2015
N	8,889	9,801	9,244
Supportive/highly supportive	43%	32%	30%
Somewhat supportive/somewhat critical	22%	20%	50%
Skeptical/very skeptical	35%	48%	20%

(Ghimire and Cordell 2014, Lane et al. 2014, Ghimire et al. 2016)

newly constituted Work Environment and Performance Office (WEPO).

Life First and Life-Work National Engagements Sessions

USFS Chief Thomas Tidwell, influenced by “another tragic fire season” in 2015, cautioned the fire community in his spring 2016 letter of intent:

Implement strategies and tactics that commit responders only to operations where and when they can be successful, and under conditions where important values actually at risk are protected with the least exposure necessary while maintaining relationships with the people we serve. (Tidwell 2016, p.1)

Tidwell encouraged the fire community to discern their situation, to “*stop, think, and talk*” before “*acting*” in any circumstance that feels like it may represent unnecessary exposure” to risk (p.1, emphasis original). Continued learning and adaptation were seen as key to keeping pace with the increasingly complex wildland-fire environment.

Tidwell’s guidance for wildland-fire response was broadcast by the Life First safety initiative, launched by the USFS in the spring and summer of 2016. Life First retained the group dialogue model and mission of the Safety Journeys but departed in title and audience. The focus notably returned to employees working in wildland fire. Life First reminded fire responders to exercise situational awareness and assess and mitigate their unnecessary exposure to risk. The USFS intended the initiative’s discursive exercises to equip wildland firefighters with critical adaptive strategies toward informed and decisive action. USFS employees used the dialogues as practice sessions to speak up without reprisal, and they demonstrated a reversal of the traditional communication order.

Of the 8,100 estimated wildland-fire employees who participated in the Life First engagements, over 2,600 offered feedback in a postengagement survey. They reported common examples of unnecessary exposure to risk based on extreme driving conditions, tactics such as extraneous mopping up after a fire, the misuse of aircraft, and the miscommunication of work objectives (Flores and Haire 2016). Moreover, participants explained that their decisions to accept normal and preventable risk were often driven by political, social, economic, and cultural pressures that surpassed their ability to appropriately use established safety practices. Across all individual, group, and organizational levels in the wildland-fire system, participants

reported that a cyclical interaction between outside pressures and a can-do identity of perseverance generated increased firefighter acceptance of risk.

In the summer and fall of 2017, the USFS implemented Life First principles throughout the agency as the Life-Work Dialogues (Tidwell 2017). Returning to the target audience of all agency fire and nonfire members, the framework continued to pursue the safety concepts of Stop, Think, Talk, then Act and the option of assignment refusal. Employee feedback from Life First also shaped the specific content of Life-Work including building trust, learning from each other, and managing exposure to unhealthy and hazardous conditions in any work environment.

Workplace Harassment and the Shift in Safety Initiatives

In the winter of 2017–2018, the #MeToo movement uncovered structural forms of gender discrimination and sexual harassment that were deeply imbedded in organizations throughout the world. The USFS was no exception. After the USFS instituted the guidance of Stop, Think, Talk, then Act, a number of women in wildland fire publicly brought claims of harassment, discrimination, abuse, and retaliation against some of their supervisors and coworkers (Flock and Barajas 2018). Harassment accusations reached the top of the USFS administration, and on March 7, 2018, Chief Tony Tooke resigned amid accusations against him of sexual misconduct in the workplace (Segerstrom 2018).

The USFS designed the safety engagement session for 2018 based on previous Life-Work findings, including the need to address sexual misconduct as a safety issue. However, in response to the Tooke accusations and a long history of claims across the agency, Congress demanded more efficient mechanisms for reporting harassment and required comprehensive antiharassment training in the USFS (USDA OIG 2020). The USFS cancelled the 2018 safety engagement. Instead, more than 44,000 USFS employees, summer seasonal employees, and affiliates attended Stand Up for Each Other (Christiansen 2018 web page, USDA OSEC 2019a, b). The day-long, mandatory antiharassment training consisted of instructional videos and group discussions regarding agency antiharassment policy, programs, and employee responsibilities for reporting.

The USFS introduced organizational changes in the wake of the agency’s public reckoning with sexual misconduct, including a revamped harassment-reporting center, changes in investigation procedures, an updated

statement of codes and commitments, and the creation of an employee advisory group. Notably, the USFS transformed a segment of its organizational structure in September 2018, creating the WEPO within the office of the USFS chief. Its mission was to “improve and sustain a workplace culture where all employees feel safe, valued, respected and supported” (Weldon 2019, p. 1). WEPO merged policy with culturally driven initiatives for both the fire community and the entire agency.

In the winter of 2019–2020, the USFS planned a relaunch of safety engagements under the new cultural banner “This Is Who We Are” (USDA FS 2019, Christiansen 2020). The all-employee safety engagements, now called “national learning sessions,” attempted to instill in every employee “the Forest Service commitment to live as a values-based, purpose-driven and relationship-focused organization” (Weldon 2020, p. 1). Due to the overwhelming demands on employee capacity during the agency’s response to the COVID-19 pandemic, however, emergency crisis response paused the implementation of the cultural-engagement sessions.

Discussion

The purpose of this account has been to chronicle how safety initiatives and development of a safety culture emerged in the USFS. By adopting a historical sociological approach to trace the development of safety culture in the agency, we describe the interconnectedness of safety initiatives and their existence within the context of a greater national culture and history of wildfire suppression. A major observation of our account is that, rather than being passive recipients, agency employees have questioned and shaped the agency’s approach to safety and actively influenced the trajectory of safety initiatives. When told to speak up, they did so.

Recent publications have also accounted for the contemporary history of the agency’s safety initiatives. Our efforts in this article identify many of the same historical events, albeit through different sources. We diverge from this literature in the insights provided by our respective disciplines. The first recent publication was produced by the USFS for the agency’s wildland-fire management magazine (Brown 2019). This journalistic documentation differs from our project in that it represents an official narrative of safety programming for the agency and seeks no scientific tradition in theory or methodology. It also glosses over the cultural issues in the workplace that compromise safety practices. The second publication was produced by a

former USFS organizational learning professional who established an ideographic counternarrative. It is based on his personal experience of implementing workplace interventions and is thoroughly informed by organizational psychology (Pupulidy 2020).

Here, we contribute an understanding of safety from the perspective of historical sociology. This subdiscipline preserves historical inquiry within sociological studies of change. We interpret the safety initiatives not as experiments toward desired nor fixed ends, but as chapters in a narrative of outcomes that are often unintended and through which the plot is continually revised. Safety is not programmed into employees; it is coproduced between agency orchestrators of initiatives and agency employees who adopt, adapt, or outright reject those initiatives in their daily work processes. The account of events that historical sociology reveals of safety in the Forest Service insists upon the exercise of human determination, even if it travels on well-trodden paths. Therefore, this assembly of documents, analyzed for recurrent themes over time, contributes to a more precise body of theory. Historical institutionalism addresses how cultural meanings are embodied in behavioral norms—that is, what our values are and the ways we typically achieve those values. It examines how enacted values not only flow through stable structures but also cut new channels into the embankments of existing organizational boundaries. Work cultures socialize their employees into accepted behaviors. Employees shape their work environments.

This article is limited to examinations of USFS safety initiatives that have shaped the development of the organizational safety culture in the agency. We reflected on the development of USFS organizational culture and safety initiatives over the past 100 years and particularly the human dimensions of safety since 1995. We found that since the 1910 Big Blowup, the history of organizational culture and safety initiatives in the agency has been anchored within a context of the high-risk occupation of wildland firefighting and engineered solutions for safety. Later, social science research on high-risk industries informed periods of *cultural awareness* when safety through fire operations and fire behavior became enhanced by social-science perspectives, *cultural management* in the shift to include fire and nonfire personnel in organizational learning, and *cultural reorganization* when a reversal of hierarchy and promotion of critical thinking and speaking were promoted in the agency.

In our document analysis, we also found a consistent precursor to the development and implementation of

USFS safety initiatives: episodes of wildland firefighter fatalities or calamitous escaped prescribed fire. Each USFS safety program originated in the hazardous conditions of wildland fire but later broadened in scope. Safety was applied through a more comprehensive concept of “well-being” in both fire and nonfire workplace environments and through fundamental attention to the routine risks of normal work experience across the agency’s field, office, and laboratory settings.

Research of the organizational cultures of the Forest Service would be improved by complementing the narratives of historical sociology with comparatively more quantitative studies of the organization of work, or organizational sociology. Future research of the USFS workforce could offer a parallel investigation into human-resource programming efforts beyond safety. For example, the diversification of the federal workforce is a historic backdrop to the particular development of Forest Service diversity, equity, and inclusion programs. Also, the devolution of federal authority to the states offers a template to track the development of stewardship programs, the implementation of cooperative agreements between the USFS and the states and associated impacts on Forest Service employees, and the potential erosion of the can-do ethic. Additionally, a 40-year expansion of neoliberal policies provides a timeline through which to study the increased stressors experienced by USFS employees and the establishment of wellness, mindfulness, and employee-assistance programs. Finally, qualitative studies of USFS employee adoption or resistance to the work ethic delivered to them via agency interventions, such as diversity or mindfulness, would enrich our understanding of the concepts and our understanding of the contemporary workforce’s disposition to change.

As the work of the USFS and other high-risk organizations becomes more complex—and external shocks such as the onset of COVID-19 upend the normal work environment—we anticipate that the USFS and other high-risk organizations working to advance a safety culture will continue to adopt concepts from the social and behavioral sciences to better absorb social-ecological crises and will learn by doing. Even while cultivating more resilient and safer workplace environments, they may experience missteps and successes along the way. In 2020, COVID-19 profoundly accelerated change in the USFS work environment, which was compounded by an overwhelming number of Americans who recreated on public lands and an unequaled wildland-fire season that ravaged the West, while social and political unrest divided the nation. Arguably, despite the development of a safety culture

that has often appeared haphazard and disconnected from previous safety initiatives, our account identifies how the agency’s contemporary safety initiatives, informed by social and behavioral science perspectives, may position agency employees to adapt to the challenges that lie ahead.

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Conflict of Interest

David Flores and Emily Haire declare that they have no conflict of interest. The findings and conclusions in this publication are those of the authors and should not be construed to represent any official USDA Forest Service or U.S. Government determination or policy.

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