

Learning by Doing:

Wildland Firefighters' Stories about their Pivotal Fireline Learning Experiences



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This research was funded by the Joint Fire Science Program, Project ID:
10-3-01-4

- ⌘ What is “safety” in wildland firefighting?
- ⌘ Research on wildland firefighters, its various approaches to safety, and unanswered questions.
- ⌘ Central questions of this study.
- ⌘ Sample & Methods.
- ⌘ Initial findings.
- ⌘ Future direction of this work.

Overview



Agencies:

Engaging fire and supporting activities while following rules and guidelines designed to prevent injuries to firefighters and members of the public.

What is “safety” in Wildland Firefighting?



Theorists:

Understand firefighting as a system of interconnected people and activities, and attempt to locate how operations are (and can be) “reliably” safe .

What is “safety” in Wildland Firefighting?



Firefighters:
In-the-moment practices
that encourage awareness,
communication and
reflection.

What is “safety” in Wildland Firefighting?

↳ **Early Socialization** (Desmond, 2006, 2007)

- ⌘ “Country Boy” habitus
- ⌘ Upbringing shapes certain competencies that fit wildland firefighting
 - ⌘ *Camping* = comfort in woods
 - ⌘ *Firewood* = saw skills

The Research:
Socialization

Who Becomes a Firefighter?

↳ Training

⌘ Leadership and Decision

Making (Useem, Cook & Sutton, 2009)

- ↻ Agency has offered more leadership training since South Canyon
- ↻ Hypothetical reconstruction of how leadership, decision training could have helped Don Mackey

{ The Research:
Training

Shaping a Firefighter

↳ Training

⌘ 10 Fire Orders (Zeigler, 2007)

- ↻ List originally functioned as guidelines helping the group to correct individual's errors
- ↻ Over time became checklist of rules that all individuals were accountable to
- ↻ The list promotes an "individual" ethic: Individuals are responsible for their own safety.

{ The Research:
Training

Shaping a Firefighter

↳ Everyday tools: new developments

⌘ Mindfulness (Weick & Putnam, 2006)

- ↳ Eastern philosophies emphasize impermanence of thoughts, situations, conceptions of the self
- ↳ Advocates awareness that interpretations are a construction (not a reality), and not necessarily accurate

⌘ After Action Reviews

- ↳ Group sensemaking, learning

**The Research:
Everyday Tools**

Shaping a Firefighter

↳ Giving “voice” (Barton & Sutcliffe, 2009)

- ⌘ Safety is rooted in an individual’s ability to give voice to concerns
- ⌘ Giving voice interrupts problematic flows of activity
- ⌘ Voice is constrained by:
 - ↳ Social factors: Status differences between members
 - ↳ Personal factors: Level of experience dealing with ambiguous situations

**The Research:
Communication &
Sensemaking**

Firefighting as a System

↳ Situational ambiguity (Alvesson, 2001)

- ⌘ Difficult to tell the difference between situations with numerous workable solutions vs. one solution
- ⌘ Difficult to know what experiences, knowledge (or combination) is necessary to evaluate both problems and solutions
- ⌘ Lack of clarity about the significance of one's knowledge or experience
- ⌘ Difficult to evaluate the effectiveness of various actions that contribute to work results



This Study: Context

- ↳ Sensemaking is a retrospective construction of a reasoning process (Weick, 1995).
- ↳ Stories of pivotal learning experiences illustrate the reasoning process, and function as “slides.”
- ↳ Organizations—especially crews—convey values that shape how members interpret their experiences (Moreland & Levine, 2001).

This Study: Rationale

- ↳ Sensemaking (Weick, 1995)
 - ⌘ Retrospective process of developing a plausible explanation for one's experience
- ↳ Communication Lens
 - ⌘ Metamorphosis stage of organizational socialization (Van Maanen & Schein, 1979)
 - ⌘ Process of becoming an integrated organization member
 - ⌘ Crews are key socializing agents (Moreland & Levine, 2001)
 - ⌘ Worldview (Taylor, 2005)
 - ⌘ The way organization members see a task or situation depends on their position in the organization, and in relation to other members

This Study: Major Constructs

- ↳ helicopter wildland firefighting crews?
- ↳ RQ2a: What kinds of fireline experiences do wildland firefighters find most instructive? In what ways?
- ↳ RQ2b: What are the sources of situational ambiguity present in wildland firefighter's stories?
- ↳ RQ2c: How do wildland firefighter's stories reflect their metamorphosis as organization members?

This Study: Research Questions

☒ Participants

- ☒ 2 Heli-rappel crews,
medium helicopters
- ☒ 27 interviewees
 - ☒ West Fork, 15 (12
males, 3 females)
 - ☒ Manzanita, 12 (11
males, 1 female)



This Study: Participants

☒ Data: Individual interviews

- ☒ Crew values
 - ☒ Thematic analysis (Owens, 1984)
 - ☒ Recurrence, repetition, forcefulness
- ☒ Stories of pivotal learning experiences
 - ☒ Narrative analysis (Labov, 1997)
 - ☒ Abstract, Orientation, Complicating event,
Resolution, Coda

This Study: Methods

	West Fork Helitack	Manzanita Helitack
Make-up	25-person, 2 helicopters Low turnover Long average tenure in fire Higher level quals (Crew boss, Helicopter manager, ICT4) Few apprentices	20-person, 1 helicopter High turnover Low average tenure in fire Lower level quals (Squad boss, ICT5) Many apprentices
Assignments	Constant rotation among modules Few AARs for entire crew	Travel together for all assignments AARs common crew practice
Interviewees	15 (12 male, 3 female)	12 (11 male, 1 female)

Participants: Two Heli-rappel Crews

	West Fork Helitack	Manzanita Helitack
Crew values:	Physical fitness	
Similarities between crews	Proactive and efficient at getting things done, and finding efficient ways to do things Tidy, organized appearance of self and gear Being respectful to fellow crewmembers, especially in the presence of other crews	
Crew values:	Members must work as individuals	Members expected to actively learn, participating in AARs and facilitated learning opportunities
Differences between crews	Members expected to know what to do (or be able to figure it out) with minimal direction All members are given a great deal of responsibility Emphasize having fun	Members are expected to operate “by the books” (<i>Organization-level rules</i>)

RQ1: What are the crew values of helitack wildland firefighting crews?

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	West Fork Helitack	Manzanita Helitack
Newcomers must adjust to the crew in the following ways	Must learn to problem solve for themselves Must adjust to not being readily told what to do Leadership rotates, so members must be adaptable <i>(Members emphasized adjusting to this particular crew)</i>	Must adjust to not working on the fireline as much as in other specialties Must adjust to the complexities and fast pace of helitack specialty <i>(Members emphasized the adjustment to the helitack specialty from other specialties)</i>
Central values that define each crew as understood by its members	"We need to know how to think for ourselves." Individuals operate autonomously, figuring things out on their own	"We are a learning crew." Getting comfortable with talking about their fire experiences Must justify and account for actions taken

RQ1: What are the crew values of helitack wildland firefighting crews?

Story patterns

- ⌘ Perfecting a reasoning process
- ⌘ Recognizing one's own experience/readiness
- ⌘ Developing a facilitative leadership approach
- ⌘ Developing a system for trusting others
- ⌘ Developing a technique for organizing details

RQ2a: what kinds of experiences do wildland firefighters find most instructive? In what ways?

	Example
↳ Orienting details about fire behavior, conditions	↳ Orientation: First crewboss trainee assignment
↳ One (or few) complicating events that make key orienting details salient	- Nevada desert, drought year - Noon, fire activity manageable - Land in the green and will hike to black when crew arrives
↳ Coda: making sure that future actions account for changes in conditions	Planning for Crewboss role
	↳ Complicating Event - Fire activity picks up - Runs toward black, barely avoids getting burned

Perfecting a Reasoning Process

	Example
↳ Numerous <i>orientation</i> details	↳ Orientation: - Hotshot crews leapfrogging - Downhill line const. off a ridge - Steep terrain, active fire
↳ <i>Complicating actions</i> involve decisions that others are making, which individual does not agree with	↳ Complicating Events - Understanding that Sup called them down into steep hole - All joking "This is stupid." - Keep going - Rolling rocks, bad footing - Sup: "I didn't call you down!"
↳ Coda: vows that in the future they would assert him/herself	↳ Coda - Speaking up isn't always enough - Individual realized they now have enough background to be influential

Recognizing One's Experience/Readiness

- | | Example |
|---|---|
| ↳ <i>Orientation details</i>
describe a specific situation | ↳ Orientation: <ul style="list-style-type: none"> ⌘ First year on engine ⌘ Foreman often quizzes crew spontaneously, when they're tired ⌘ Foreman puts individual in charge of setting up a big hose lay (indiv's first one) |
| ↳ <i>Complicating actions</i>
describe how a previous leader handled a similar situation effectively | ↳ Complicating Events <ul style="list-style-type: none"> ⌘ Indiv sets up hose lay most inefficiently ⌘ Foreman doesn't say anything |
| ↳ <i>Coda</i> : This is the approach they now use | ↳ Coda: You have to let people try, even though they may mess up |

Developing a Facilitative Leadership Approach

- | | Example |
|---|--|
| ↳ <i>Orientation details</i>
describe a routine situation, usually in first few fire seasons | ↳ Orientation: <ul style="list-style-type: none"> ⌘ First year on engine ⌘ Hovercraft transports engine across body of water |
| ↳ <i>Complicating actions</i>
involve a co-worker or leader making a surprising mistake | ↳ Complicating Events <ul style="list-style-type: none"> ⌘ Foreman fails to follow basic instructions for securing engine on hovercraft (leaves window open) ⌘ <i>Window shatters in transit</i> |
| ↳ <i>Coda</i> : identify criteria for trusting others | ↳ Coda: Actions speak louder than a title. |

Developing a Technique for Trusting Others

- ↳ Orientation details describe a set of details (e.g., procedures, gear)
- ↳ *Complicating actions* involve recognizing potential for mistakes with undesirable consequences
- ↳ *Coda*: trusting the technique allows them greater SA

Example

- ↳ Orientation:
 - ⌘ Spotter on light rappel ship transfers to a medium
 - ⌘ Configurations are different and complex
- ↳ Complicating Events
 - ⌘ Studies configuration of the medium
 - ⌘ Observes various techniques that medium's spotters use
 - ⌘ Sees various openings for errors
 - ⌘ Develops a personal technique s/he can trust

Developing a Technique for Organizing Details

- ↳ present in wildland firefighter's stories?
 - ⌘ What is going on in situations in which firefighters hold themselves back (from speaking up, taking action, etc.)?
 - ⌘ When is situational ambiguity fire-related? When is it related to social factors?
 - ⌘ How does situational ambiguity play out in the various story patterns?

Further RQs in this analysis

RQ2c: How do wildland firefighter's stories reflect their metamorphosis as organization members?

- ⌘ How do their stories reflect changes in their perspectives, in how they see situations.
- ⌘ How, if at all, do they see themselves and their responsibilities differently as a result of the experience?
- ⌘ How do they socialize themselves, evaluating themselves as more or less "experienced"?

Further RQs in this analysis

⌘ Recap:

- ⌘ Sensemaking is a retrospective construction of a reasoning process.
- ⌘ Stories illustrate the reasoning process, and function as "slides" which represent experience.
- ⌘ Organizations—especially crews—convey values that shape how members interpret their experiences.
- ⌘ Question: Do firefighter's stories reflect the unique values of their current crew?

Discussion

- ↳ Question: Do firefighter's stories reflect the unique values of their current crew?
 - ⌘ Most of the stories were from previous seasons, different crews, different specialty areas.
 - ⌘ Stories tended to occur at various milestones
 - ↳ Taking on leadership role, more responsibility
 - ↳ Learning from a mistake
 - ↳ First several fire seasons
 - ⌘ However, that said, some crew values DID appear to come through in the stories.

Discussion

- ↳ Some crew values DID appear to come through in the stories
- ↳ West Fork ("We need to think for ourselves.")
 - ⌘ Stories largely reflect instances in which members were challenged to trust their judgment, and as a result became more confident in their judgment.
 - ↳ Developing a reasoning process
 - ↳ Recognizing one's readiness/experience
 - ⌘ Hesitant to share stories unless context was the same as the story. *"Everyone has their war story."*

Discussion

- ⌘ Some crew values DID appear to come through in the stories
- ⌘ Manzanita (“We are a learning crew.”)
 - ⌘ Stories most prominently reflect basics about trusting supervisors and organizing information.
 - ⌘ Developing a technique for trusting others
 - ⌘ Developing a technique for organizing information
 - ⌘ Developing a facilitative leadership approach
 - ⌘ Comfortable with sharing stories. *“You never know when someone can learn vicariously from your experience.”*

Discussion



- ⌘ Quantitative Survey of 200+ wildland firefighters
 - ⌘ Learning culture and values
 - ⌘ Importance of various types of experiences
- ⌘ Latent variable analysis
 - ⌘ Nested data
 - ⌘ Crew → specialty → organization → occupation
- ⌘ *I will need participants from all specialties!*

Up Next: Phase 2, Summer ‘11



Thank you!
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