

Remembering the Past, Anticipating the Future: Community Learning & Adaptation Discourse in Media Commemorations of Catastrophic Wildfires in Colorado

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ABSTRACT

Wildfires are increasing in the American West as climate change lengthens the fire season and development expands into the wildland-urban interface. Catastrophic wildfires leave policymakers to grapple with the question of what lessons they can draw from past experiences to reduce future wildfire risk. The media can play an important role in the process of learning from, and adapting to, socionatural disasters such as wildfire. Media coverage of hazards works to both reflect and shape the way that they are understood and, consequently, the way that policymakers and the public respond to them. This study investigates two questions. First, how does the media contribute to the construction of policy discourse about community-level adaptation? And second, what role does anniversary journalism play in identifying the policy issues that underlie wildfire hazards and framing them in narrative terms? To answer these questions, we analyze local and statewide media coverage of two catastrophic wildfires that occurred in Colorado in 2012. We analyze media coverage from a one-year window around each fire as well as post-fire anniversary coverage in order to compare policy problem definitions and narrative framings. We find some important differences between the two sets of coverage, with implications for policy learning from wildfires and other types of natural and socionatural disasters.

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INTRODUCTION

Wildfire is perhaps the clearest example to date of a socio-natural hazard that is being exacerbated by climate change (Liu et al., 2010; Westerling et al., 2006). Global warming has lengthened the wildfire season across more than a quarter of the Earth's vegetated surface, increased the frequency of longer-than-average fire seasons in those locations, and expanded the global burnable area (Jolly et al., 2015). In keeping, wildfire risk mitigation and response have become an essential lens through which to study of socio-natural hazard-related learning and adaptation in the Anthropocene, an epoch that many expect will be marked by a combination of increased human vulnerability to worsening socio-natural hazards (O'Brien and Leichenko, 2000). In the wildfire context, attempting to address socio-natural hazards before they become disasters is especially pressing for communities located at the wildland-urban interface (WUI) within incendiary landscapes. WUI communities are becoming further entangled in the wildfire disaster cycle not only because they located in places that may be exposed to higher risk because of the increase in frequency and severity of wildfires, but also because they are key players in exacerbating and/or mitigating wildfire hazards (McCaffrey et al., 2013). This study launches from the premise that, in order to learn from and adapt to catastrophic wildfires, WUI communities must apply lessons from past wildfires to reduce future vulnerability. More specifically, we argue that WUI communities must acknowledge wildfire's combined human-natural causes and work to mitigate those causes.

Here, we investigate community-level wildfire learning and adaptation via local media discourse. Local media provide an informative window into disaster-related learning and adaptation processes because the media is uniquely equipped to serve as an agent of collective memory and a public agenda-setter (Edy, 1999; Miles & Morse, 2007). Nonetheless, local media's role in community-level disaster learning and adaptation remains under-theorized (Leitch & Bohensky, 2014) for at least three reasons. First, most disaster discourse studies focus on national media (Houston et al., 2012). Second, such

studies typically focus on a single phase of the disaster cycle rather than its entirety (Lindsay, 2012; Robinson, 2009). And third, disaster discourse analyses often isolate a single socio-natural disaster and, in doing so, fail to consider circumstances of multiple disasters and increasing disaster frequency likely in the Anthropocene (Su, 2010; Trümper & Neverla, 2013). Here, we address all three of these knowledge gaps by studying learning and adaptation discourse in local media coverage across a wildfire disaster cycle in two Colorado communities that recently faced simultaneous and/or recurring catastrophic wildfires.

We investigate local media coverage of wildfire with a combination of practical and theoretical questions in mind. On the practical level, we ask whether the anniversaries of catastrophic wildfires serve as distinctive time periods for critical reflection on wildfire hazards and the mitigation of future wildfire risks. Specifically, we examine whether local media coverage of the anniversaries of catastrophic wildfires differs from other media coverage surrounding the disasters, and the effects of simultaneous and recurring wildfires on such coverage. We analyze local media coverage of the 2012 wildfire season in Colorado – the most catastrophic on record in the state – with special attention to commemorations of 2012’s two most impactful wildfires in the subsequent years of 2013, 2014, and 2015. By focusing on wildfire anniversary discourse, we also contribute to theory building regarding the ways that the media connects past events to the future. We join others (Tenenboim-Weinblatt, 2013; Trümper & Neverla, 2013) in bridging the temporal divide between two major areas of media theory: collective memory studies, which ask how media constructions of the *past* inform the *present*, and agenda-setting studies, which ask how media attention to issues in the *present* affect the *future*. As will be explained in more detail below, we further develop Tenenboim-Weinblatt’s (2013) concept of “collective prospective memory” – which the author defines as “mission-oriented” remembrance (p98) – to unpack the ways that local media uses the *past* to inform the *future* in the context of socio-natural disasters.

LITERATURE REVIEW

Wildfire Hazards and Communities

Worsening Wildfire Trends

In the western United States, growing wildfire hazards are the product of factors that are prevalent in the region, but not unique to it – namely the convergence of fire-adapted ecosystems with dense fuel loads resulting from contemporary and historic wildfire suppression, a warming climate, and rapid human development of the WUI. Similar patterns of wildfire risk exist in other fire-prone regions around the world, such as Australia, Israel, Greece, Indonesia, and many sub-Saharan African nations (Liu et al., 2010). Colorado’s Front Range¹ illustrates these trends well. Wildfire suppression efforts have intensified the fire regime there, and climate change is lengthening and exacerbating the wildfire season (Westerling et al., 2006). Meanwhile, Colorado’s WUI continues to rapidly develop. By 2010, homes in the Front Range WUI numbered approximately 556,000 and were increasing at a rate of 100,000 per decade (Hubbard, 2013).

Dense fuel loads, WUI growth, and climate change combined to make wildfire season of 2012 – the focus of this study – the worst on record in Colorado, and one of the worst nationally (Jolly et al., 2015). In June 2012, the High Park Fire killed one person and destroyed 259 homes in close proximity to the city of Fort Collins. Two weeks later, the Waldo Canyon Fire burned into the city of Colorado Springs, where it killed two people and destroyed 347 homes. Each wildfire gained the dubious (and temporary) ranking of most destructive in state history when it burned. A third wildfire also merits introduction here, though it occurred a year later. The Black Forest Fire burned just northeast of Colorado Springs in June 2013, during the one-year anniversary of the Waldo Canyon Fire, which is why

¹ The Front Range extends along the eastern foothills of the Rocky Mountains and includes the major cities of Pueblo, Colorado Springs, Denver, Boulder, and Fort Collins, plus many smaller communities.

the two fires are often discussed together. The Black Forest Fire killed two people and destroyed 486 homes.

Community Involvement in Hazard Mitigation

Wildfire hazards are mixed-jurisdictional challenges within which community-based hazard mitigation efforts have become increasingly important (McCaffrey et al., 2013). About 70% of forested WUI lands in the American West are privately owned, making individual homeowners and local governments key players in such efforts (Schoennagel et al., 2009). Their importance has been further bolstered by the rise of collaborative approaches to natural resource management. Federal programs now incentivize WUI communities to write mitigation-focused Community Wildfire Protection Plans (CWPP) that detail strategies for thinning of trees on individual lots and within WUI neighborhoods, among other hazard reduction efforts (Cohen, 2000).

Against this backdrop of growing hazard and community involvement, it is increasingly important to understand how communities apply lessons from past wildfires to reduce future vulnerability. Disaster-related learning and adaptation are key areas of inquiry in hazards scholarship, environmental policy theory, and resilience theory, all of which see socio-natural disasters as events that have the potential to catalyze learning and adaptation. In this study, we utilize the following definition of learning and adaptation: “Internalizing lessons from past experience and knowledge of disasters, putting such lessons into practice, and avoiding past mistakes” (Leitch & Bohensky, 2014, p16). Importantly, this definition goes beyond re-attaining the status quo to contemplate how a community might redefine its relationship to the socio-natural disaster cycle. In concept, the disaster cycle is commonly broken down into four phases: mitigation, preparedness, response, and recovery (Lindsay, 2012). In practice, however, the disaster cycle is rarely so cleanly organized; its four stages overlap and are interrelated. For example, hazard mitigation activities can occur in any phase of the disaster cycle. Mitigation work is not limited to the mitigation phase alone. Here, we focus specifically on learning and

adaptation in terms of hazard/disaster *mitigation* because of communities' growing role in mitigation efforts, and we do so across the disaster cycle.

The Role of Media in Learning & Adaptation from Socio-Natural Disasters

Disaster Information and Framing

The media participates in socio-natural disasters in myriad interrelated ways, many of which have implications for learning and adaptation. The media are a major source of information on hazards and disasters such as wildfire (McCaffrey et al., 2013). Media coverage of disasters has been shown to prompt emergency response and increase humanitarian assistance (Barnes et al. 2008). The media also shapes discourse around disasters by framing them in ways that invoke particular problem definitions and policy solutions (Boykoff, 2011). For example, in an oft-cited experimental study on framing effects, Iyengar (1990) found that, among people who read newspaper articles on the issue of poverty, those who had been given a story that framed poverty in trend-oriented, ' terms were significantly more inclined to award government assistance to poor people than those who had read a story that framed poverty in an individualized, episodic manner. The media are often criticized for emphasizing "episodes" over "themes" in disaster coverage. National media, in particular, have been disparaged for giving only event-driven attention to disasters, with little consideration of the systemic issues involved in their causes (Houston et al., 2012). It is less clear whether local media deserves the same critique, partly because local media are often overlooked in this context, and because few studies track media coverage through the entire disaster cycle (Robinson, 2009).

Anniversaries: Collective Memory-Making, Causality, Critique, and Comfort

In the aftermath of socio-natural disasters, the media also serves as an agent of collective memory-making. Put simply, collective memory is the meaning that communities make of their pasts. It is a socially constructed form of remembrance that is shaped as much by a community's present needs as by the past itself (Halbwachs, 1980 [1926]). The media play a special societal role in shaping

collective memory by writing “the first draft of history,” and also doing history’s “rewrites” later on, often on the anniversaries of events (Edy, 1999, p71). Anniversaries have the potential to serve as timeframes for negotiation of an event’s causes, its meanings, and its implications (Edy, 1999). In this sense, anniversaries can act as “critical discourse moments,” or periods in which established discursive positions are reworked (Carvalho, 2008). Among disaster anniversaries, first anniversaries are particularly important for collective memory-making and critical reflection because they occur while the disaster itself is fresh in peoples’ minds and recovery efforts are still underway (Robinson, 2009).

More information about a disaster’s causes becomes available over time, which also influences anniversary reporting. For example, in an analysis of the Challenger space shuttle explosion, Hilton et al. (1992) found that media explanations of the disaster became more nuanced as time went by – a trend that the authors called “the progressive localization of cause” (53). Other studies have confirmed this pattern. In a comparative analysis of earthquake reports, Cowan et al. (2002) found that “day-after” stories vaguely generalized damage and portrayed earthquakes as all-powerful, while one-year anniversary (“year-after”) stories described damage in more precise terms and emphasized humans’ role in earthquake hazard mitigation. Importantly, in an experimental setting, these two sets of stories generated different hazard attributions in readers. The day-after reports inspired readers to attribute building damage to the (uncontrollable) magnitude of the earthquake, while the year-after reports led them to attribute damage to (controllable) building design (Cowan et al., 2002). These data suggest that the media can have real impacts on risk perception, and its changing nature over time.

Anniversaries are not guaranteed to be critical discourse moments for disaster learning and adaptation, however. Anniversary coverage also plays an important role in grieving, which means that anniversary stories are just as likely to memorialize disasters without invoking politics, critique, or context. This is commemorative journalism that “reaffirms rather than informs” (Kitch, 2000), primarily through the telling of survivor stories. It memorializes in a way that is meant to help people move

forward, but usually in a format that reinforces dominant culture and the status quo (Su, 2012). Read broadly, then, the disaster anniversary literature suggests that media's commemorations of disasters tend to be a combination of both feel-good recovery journalism and more critical, examinations of disaster-related circumstances (Robinson, 2009; Su, 2012; Trümper & Neverla, 2013). It is not clear in what ratio these two styles of commemoration coexist, however, or how the balance of comfort and critique in anniversary journalism changes over time.

Anniversaries: Collective Memory-Making and Agenda-Setting

The anniversaries of socio-natural disasters are also a fruitful time to examine the under-theorized interrelationships between past, present, and future in the news. Most previous studies on temporality in media have taken up single aspects of time – illustrating the ways that journalists invoke the past *or* the future in their reporting on current events (Zelizer, 2008; Neiger, 2007). Much less attention has been paid to the interrelationships among multiple temporal orientations in the news, especially the connections that the media draws from the *past*, to the *present*, and forward to the *future* (Tenenboim-Weinblatt, 2013). Our limited understanding of the ways the media links past to future in the news is partly due to an under-theorized disconnect between two major areas of media theory: collective memory research, which is oriented toward the *past*, and agenda-setting research, which is oriented toward the *future*. In contrast to largely backward-looking collective memory theory explained above, agenda-setting theory describes the media's potential influence on the future through its ability to shape the public agenda. The public agenda is defined as the issues that the public perceives as important at any given time, and as requiring some future resolution or response, and it has been found to be greatly influenced by the media agenda (McCombs, 2004; Scheufele & Tewksbury, 2007).

Communication scholars have only recently begun to bridge collective memory theory and agenda-setting theory in an effort to understand the ways the media connects the *past* to the *future* in the news. For example, Tenenboim-Weinblatt (2013) recently offered the concept of “collective

prospective memory” to describe the collective recognition of what needs to be done in the *future* based on the *past*. The author further defined collective prospective memory as a form of remembrance that is “mission-oriented” rather than solely commemorative (2013, p98). Collective memory-making and agenda-setting converge in mediated prospective memory practices when the media actively maintains an unresolved issue from the past on the media agenda. Using international kidnapping news coverage as her case study, Tenenboim-Weinblatt provided three examples of mediated prospective memory practices: (1) explicit reminders of unresolved issues (i.e., reminders that a person is in captivity), (2) marking time (i.e., counting days spent by a person in captivity), and (3) actively constructing windows of opportunity (i.e., claiming a captive must be rescued by a certain date).

These three practices provide an essential starting point for theorizing mediated prospective memory practices, and the ways they forge the past with the future. They are unlikely to be the only three at work in the media, however. Here, we engage the concept of mediated prospective memory in the context of socio-natural disaster anniversaries to further develop our understanding of the news’s past-future axis. In doing so, we extend the concept of collective prospective memory to the concerns of the Anthropocene – namely, the growing imperative that vulnerable communities learn from socio-natural disasters and apply those lessons to reducing future hazards. Unlike the kidnapping cases referenced by Tenenboim-Weinblatt (2013), which could potentially be resolved with a few swift diplomatic actions, socio-natural hazard mitigation requires long-term engagement by many actors, such as multi-jurisdictional and multi-scalar forest thinning efforts to avoid or ameliorate catastrophic wildfire. As a result, the mediated prospective memory work related to socio-natural disasters is likely to differ slightly from reminders, marking time, and constructing windows of opportunity. In this study, we explore collective prospective memory-making in the context of simultaneous and recurring catastrophic wildfire. We define *simultaneous* wildfires as per the 2012 Waldo Canyon and High Park blazes – two major wildfires that burned in two different, but not distant, communities in the same state

at the same time (e.g., Colorado Springs and Fort Collins are 130 miles apart). We define *recurring* wildfires as following the patterns of the Waldo Canyon and Black Forest wildfires in 2012 and 2013, respectively – two major wildfires that burned different parts of the same community (the greater Colorado Springs area) in back-to-back wildfire seasons.

RESEARCH QUESTIONS

In order to assess the local media's role in community-level wildfire-related learning and adaptation, we pose two broad questions. We ask the practical question of whether wildfire anniversaries serve as critical discourse moments for wildfire learning and adaptation at the community level in local media. In parallel, we also explore the theoretical question of how the media's collective memory and agenda-setting work connect in the context of worsening wildfire trends. The following specific research questions guide our analysis:

- *RQ1: Does local media coverage of the anniversaries of catastrophic wildfires differ from media coverage during rest of the wildfire disaster cycle? If so, how?*
- *RQ2: How are multiple catastrophic wildfires (in the form of simultaneous wildfires and recurring wildfires) commemorated in local media?*

RESEARCH DESIGN AND METHODS

We expect that, if any wildfire season were to inspire learning and adaptation discourse in Colorado, it would be the especially destructive 2012 season and in the affected communities of Colorado Springs and Fort Collins. We also expect that this discourse would be present in local newspapers because the media's collective memory and agenda-setting functions are particularly pronounced in newspapers (Edy, 1999; McCombs, 2004; Miles and Morse, 2007).

This study proceeded in two methodologically distinct, but related phases. The first phase consisted of a broad assessment of local news coverage of the 2012 Waldo Canyon and High Park wildfires. Articles were collected from the local newspapers in Colorado Springs (*The Gazette*) and Fort Collins (*The Coloradoan*), and from *The Denver Post*, which covers the entire Front Range region. We

gathered articles starting from six months prior to the wildfires (1/1/2012) to just over one-year post-ignition (6/30/13), for a total of approximately 18 months' coverage that captured the entire wildfire disaster cycle (Table 1). In the results, we call this our "18-month sample."

Six coders analyzed the articles using an a priori coding framework adapted from Heikkila et al. (2014) into a 53-question quantitative and qualitative codebook. Codes tracked policy problem definitions, thematic versus episodic framing, and other variables. Coders followed a standard set of instructions to foster intra- and inter-coder consistency and reliability (Krippendorf, 2004). The coding team established intercoder reliability using a random subset of articles (10%) wherein agreement ranged from 75% ($\alpha=.53$) regarding episodic, thematic, or combined framing to 100% ($\alpha=1.0$) regarding the presence of a policy problem. Quantitative data were analyzed using statistical software; qualitative data were analyzed by hand.

After the first phase of analysis revealed unique trends within wildfires' one-year anniversary coverage, which appeared at the end of the original eighteen-month sample, a second phase of research began. A single coder isolated the one-year anniversary stories in the 18-month sample. The one-year anniversary timeframe was defined as all of June 2013 to account for the wildfires' June ignition dates and intensive burning throughout that month. The June 2013 anniversary sample was further narrowed to include only stories that directly commemorated the 2012 fires. To extend the analysis, additional commemorative articles were collected dating from June 2014 and 2015 to capture the wildfires' second and third anniversaries ($n=17$). The June 2013, 2014, and 2015 anniversary stories were compiled into what we call our "anniversary only" sample ($n=49$, Table 2). A single coder conducted a second round of qualitative coding with this sample. The second coding framework asked 15 questions that probed further into articles' treatment of wildfire causality, thematic versus episodic frames, and other variables. Two coders checked for consistency with a random subset of articles (10%) and achieved full

agreement. Results were analyzed qualitatively by looking for patterns across variables and change over time.

The key strength of this study design is that the most discursively-important anniversary of the catastrophic 2012 wildfires – the first, in 2013 – can be compared across an 18-month wildfire disaster cycle (that included mitigation, preparedness, response, and recovery phases), rather than being studied in isolation or only in contrast to later anniversaries. The 2012-2013 sampling timeframe also captured the grim reality of worsening wildfire conditions in Colorado by including two simultaneous wildfires and two recurring wildfires. In fact, the 2013 anniversary period alone captures three disaster cycle phases: recovery activities (relative to the Waldo Canyon Fire), response activities (relative to the Black Forest Fire), and mitigation activities (relative to future hazards).

Table 1. 18-Month Sample (Jan. 1, 2012-June 30, 2013) search terms, newspapers, and article counts.

Newspaper	Audience	Circulation	Search Terms	Article Count
Colorado Springs Gazette	Local	64,394 daily	Pre-fire: fire mitigation, fire prevention, fire management, fire risk Post-fire: Waldo Canyon, Waldo Wildfire, Colorado Springs Wildfire	331
Fort Collins Coloradoan	Local	28,501 daily	Pre-fire: fire mitigation, fire prevention, fire management, fire risk Post-fire: High Park Fire, Fort Collins Wildfire	293
Denver Post	Statewide & Regional	416,676 daily	Inclusive of all terms used above	252
		509,571 daily	TOTAL	876

Table 2. Anniversary-only sample (June 2013, 2014, 2015) newspapers and article counts.

Anniversary	#1 2013	#2 2014	#3 2015	Article Count
Ft. Collins Coloradoan	3	4	0	7
Colorado Springs Gazette	22	8	3	33
Denver Post	7	2	0	9
TOTAL	32	14	3	49

RESULTS

RQ1: Does local media coverage of the anniversaries of catastrophic wildfires differ from media coverage during rest of the wildfire disaster cycle? If so, how?

Anniversary Coverage by Comparison

To address this question, we focused on our original 18-month sample of wildfire media coverage and the one-year (2013) anniversary coverage within it. We engaged the wildfires' one-year anniversary for two reasons. First, we could compare it back against the rest of the sample in which it fit. Second, one-year anniversary stories were more plentiful than second- or third-year anniversary stories (Table 2), as is to be expected from first-year anniversary coverage (Robbins, 2009).

The one-year anniversary of the Waldo Canyon and High Park wildfires gained significant local press attention, but coverage differed drastically, with the Colorado Springs *Gazette* vastly out-publishing the Fort Collins *Coloradoan* and *The Denver Post* (Table 2). The Waldo Canyon Fire may have received increased press attention because it burned into Colorado Springs city limits and destroyed more homes in a more densely populated area than did the High Park Fire. Furthermore, 24% of Colorado Springs' population lives in the WUI, and the city has been very active in hazard mitigation in recent years, making wildfire an especially salient issue in that community. Because the Colorado Springs *Gazette* focused so intently on the memorialization of the Waldo Canyon Fire, the analysis below draws more heavily from that community and newspaper.

The one-year wildfire anniversary coverage differed in important ways from wildfire coverage across the rest of the 18-month sample (Table 3). Here, we focus on the two most conspicuous divergences: (1) the one-year anniversary coverage was far more likely to be framed thematically than episodically, and (2) it was far more likely to discuss policy problems, especially those tied to wildfire causality and mitigation.

Table 3. Full 18-month media sample and 2013 anniversary coverage compared regarding framing and presence of a policy problem.

	Full 18mo Sample (n=876)	Full 18mo Sample w/o 2013 Anniversary Coverage (n=844)	2013 Anniversary Coverage (n=32)
Framing			
Episodic Framing	70% (613)	72% (604)	28% (9)
Thematic Framing	26% (228)	25% (211)	28% (9)
Combined Framing	4% (35)	3% (28)	44% (14)
Policy Problem Present (% w/in sample and #)	26% (230)	24% (203)	84% (27)
Symptom	75% (172)	80% (162)	37% (10)
Cause	25% (58)	20% (41)	63% (17)

Note: For articles that seemed to be on the borderline of episodic or thematic framing, coders paid close attention to the specificity and personalization of the story's main topic and setting.

Thematic vs. Episodic Framing

All stories were coded for framing style based on Iyengar's (1990) categories. Episodic stories described wildfire in terms of how it impacted individuals. Thematic stories emphasized collective wildfire trends and issues. A third category ("combined framing") captured stories that balanced both framing styles equally, placing individual impacts in a broader context or vice versa.

The 2013 anniversary coverage of the Waldo Canyon and High Park wildfires was as likely to be framed thematically than episodically, and were especially likely to be framed in an episodic-thematic combination (44%), contrary to coverage across the rest of the wildfire disaster cycle, which favored episodic frames per disaster coverage norms (Houston et al., 2012). Nearly three quarters (72%) of the one-year anniversary stories were framed thematically or in a thematic/episodic combination, as opposed to 25% during the remainder of the 18-month sample. This framing style lent itself to taking a birds-eye perspective on the 2012 wildfires and placing them in the context of broader WUI trends. When stories were framed thematically, or in episodic/thematic combination, they were more likely to cover growing WUI wildfire hazards and to address the complexities of wildfire causality (Table 4). In the spirit of Hilton et al.'s (1992) "progressive localization of cause," these stories provided more nuanced assessments of wildfire hazards and addressed wildfire's mixed human-natural origins.

Anniversary stories with a thematic component typically described catastrophic wildfire in the WUI not as a de-politicized force of nature, but as a hazard that humans have co-produced (Davis, 1995). For examples, please refer to Table 4, which summarizes common episodes, themes, and episode/theme combinations in the 2013 anniversary coverage.

Table 4. Common episodes and themes in episodic and thematic framing in one-year anniversary stories (2013) commemorating the Waldo Canyon and High Park wildfires.

Common Episodes (28%, n=9)	Common Themes (28%, n=9)	Common Episode/Theme Combinations (44%, n=14)
Individuals celebrating rebuild Individuals struggling with rebuild or insurance claims Individual survivor stories, memories of wildfire, continued trauma from wildfire Individuals attending memorial or support group events Mitigation work being done by specific individuals Lessons learned by a specific fire department Investigation of ignition source	Continued risk in WUI, fire trends on Front Range WUI growth, real estate market remaining steady despite wildfires Policy options for managing WUI risk and growth Mitigation goals and work at city or regional level Mitigation tips for homeowners Acknowledging and adapting to a “new normal” in terms of wildfire risk Broad changes to emergency response, especially evacuation and air response Overview of wildfire damage and losses Rebuilding trends in WUI overall, comparing rebuilding trends between burn areas	History of one WUI neighborhood’s development in context of current wildfire trends Individual survivor stories in context of multiple fires and consideration of “new normal” wildfire conditions A neighborhood’s mitigation efforts in context of broader WUI dynamics Risks of future fires in specific locations and also in context of broader WUI trends Potential local hydrologic impacts of a catastrophic high alpine wildfire Ecological impacts of wildfires compared National forest mitigation, restoration projects cut because of budget challenges Influence of new rebuilding codes on various parts of city Individuals’ or neighborhoods’ rebuilding efforts in context of broader WUI risks and appeal Individual insurance problems in context of broader claim trends

Specifically, wildfire media often followed the patterns of Cowan et al.'s (2002) earthquake coverage. Episodically framed "day-after" stories portrayed the wildfires as all-powerful, whereas thematically framed "year-after" stories provided reminders of humans' role in the wildfire hazard equation. Two stories written nearly a year apart by the same *Denver Post* reporter illustrate this contrast. The lead paragraph to an episodically framed story published three days into the Waldo Canyon Fire described the conflagration in these terms:

"A three-day-old wildfire erupted with catastrophic fury Tuesday, ripping across the foothills neighborhoods of Colorado Springs, devouring an untold number of homes and sending tens of thousands fleeing to safety in what was shaping up as one of the biggest disasters in state history" (Meyer, 2012).

But a thematically-framed story written one year later described the Waldo Canyon Fire this way:

"More people are moving into forested areas that are becoming increasingly overgrown. And persistent drought conditions have made the likelihood of destructive wildfires a near certainty... All it takes is a spark" (Meyer, 2013a).

The 2012 "day-after" (or "during") story personified the blaze as an all-powerful agent that "devoured" the landscape as helpless people fled. It acknowledged only dry conditions as a contributor to the fire's destructiveness. The "year-after" story took the very different approach of describing the Waldo Canyon blaze and its destructiveness as a nearly inevitable human product of WUI development and wildfire suppression – a largely human creation in need of only a "spark."

Policy Problems: Wildfire Causes vs. Wildfire Symptoms

Our policy problem coding provided finer detail on wildfire causality discourse. An article included a policy problem if it explicitly identified a wildfire issue that humans could (or should) work to address. For example, the most common policy problem invoked in the 18-month sample was the need for more firefighting resources (20% of policy problems identified). With the critical distance provided by one year of hindsight and a more thematic framing style, the 2013 anniversary coverage was much more likely to include specific policy problems, relatively speaking, than coverage across the rest of the disaster cycle (Table 3). Nearly all (84%) of the 2013 anniversary coverage incorporated the discussion

of a specific policy problem, whereas only 24% of the stories published in the remainder of the 18-month sample discussed a specific policy problem. Table 5 provides more detail on the appearance of policy problems in both media samples, categorized by season and by anniversary.

The one-year anniversary coverage often did more than just acknowledge the mixed human-natural causes of wildfire; it raised specific policy problems related to those causes and their mitigation. Table 5 also illustrates this by dividing policy problems into the categories of “symptoms” and “causes” based on their relationship to the disaster cycle. The “symptoms” category refers to policy problems that fit within the disaster cycle’s response and recovery phases, such as evacuation or insurance challenges. These are important policy problems, but they describe catastrophic wildfire’s *effects*, not its *causes*. Causal policy problems, on the other hand, are those that directly exacerbate the impacts of catastrophic wildfire, such as building in the WUI. Causal policy problems tend to align with the mitigation phase of the disaster cycle, or at least with mitigation objectives, such as managing WUI development in ways that reduce wildfire hazard (e.g., requiring defensible space). Overall, most of the policy problems brought up in the 18-month media sample addressed *symptoms* of catastrophic wildfire (Table 5). The skew toward discussing wildfire symptoms over causes was prevalent year-round, but it was especially pronounced during peak wildfire season, when stories frequently focused on firefighting resource needs.

The 2013 anniversary coverage reversed this trend in policy problem discourse, however, by devoting nearly two-thirds (63%) of its attention to *causal* policy problems, as compared to an average of 20% across the remainder of the sample. The one-year anniversary stories also addressed wildfire causes over symptoms despite being published in June – in the throes of the wildfire season and as the Black Forest Fire burned just miles from the Waldo Canyon burn zone. In terms of causality, the one-year anniversary stories often discussed the need to better plan or control WUI development and the need for more forest thinning by WUI homeowners and at the landscape-scale (Table 5).

Table 5. Policy problems appearing in 18-Month Sample and at the 2013, 2014, 2015 anniversaries of the Waldo Canyon and High Park wildfires.

18-Month Sample			
LATE FALL-WINTER (Non-Fire Season): n=125; # with a policy problem = 46 (37%)			
Symptoms (n=41, 89% of policy problems)		Causes (n=5, 11% of policy problems)	
Agencies need more wildfire fighting resources	11	Need to plan for warmer climate, longer fire season	2
Problems with insurance	9	Need WUI growth/rebuild to be smarter, safer	1
Problems with wildfire recovery, rebuilding	9	Need to control WUI growth, acknowledge risk	1
Need to mitigate post-fire hydrologic threats	6	Need for more mitigation by WUI homeowners	1
Problems with agency response to wildfires	6		
SPRING (Borderline Fire Season): n=107; # with a policy problem = 33 (31%)			
Symptoms (n=26, 79% of policy problems)		Causes (n=7, 21% of policy problems)	
Agencies need more wildfire fighting resources	9	Need for forest-scale thinning, controlled fire	3
Problems with insurance	8	Need for more mitigation by WUI homeowners	3
Need to mitigate post-fire hydrologic threats	7	Need to plan for warmer climate, longer fire season	1
Problems with agency response to wildfires	2		
SUMMER-EARLY FALL (Fire Season)*: n=613; #with a policy problem=124 (20%)			
Symptoms (n=95, 77% of policy problems)		Causes (n=29, 23% of policy problems)	
Agencies need more wildfire fighting resources	28	Need to control WUI growth, acknowledge risk	0
Negative economic impacts of wildfire	14	Need for more mitigation by WUI homeowners	8
Problems with wildfire recovery	13	Inadequate mitigation (mix of actors)	4
Problems with insurance	11	Need to plan for warmer climate, longer fire season	3
Need to mitigate post-fire hydrologic threats	8	Illegal fireworks use despite ban	2
Problems with agency response to wildfires	8	Need WUI growth/rebuild to be smarter, safer	1
Lack of information on fire behavior, damage	8	Need for forest-scale thinning, controlled fire	1
Firefighters need health insurance	5		
Anniversary Coverage			
ONE-YEAR ANNIVERSARY (June 2013): n=32; # with a policy problem=27 (84%)			
Symptoms (n=10, 37% of policy problems)		Causes (n=17, 63% of policy problems)	
Problems with insurance	4	Need to control WUI growth, acknowledge risk	5
Problems with agency response to wildfires	3	Need for more mitigation by WUI homeowners	4
Problems with wildfire recovery	3	Need WUI growth/rebuild to be smarter, safer	4
		Need for forest-scale thinning, controlled fire	3
		Need to plan for warmer climate, longer fire season	1
		Problems determining exact cause of ignition	1
TWO-YEAR ANNIVERSARY (June 2014): n=14, # with policy problems=13 (93%)			
Symptoms (n=7, 54% of policy problems)		Causes (n=6, 46% of policy problems)	
Problems with insurance	5	Problems determining exact cause of ignition	3
Problems with agency response to wildfires	2	Need WUI growth/rebuild to be smarter, safer	1
		Need for forest-scale thinning, controlled fire	1
		Need to control WUI growth, acknowledge risk	1
THREE-YEAR ANNIVERSARY (June 2015): n=3, # with policy problems=2 (67%)			
Symptoms (n=2, 100% of policy problems)		Causes (n=0)	
Problems with insurance	2		

*Without Anniversary 2013 coverage.

Note: Fire season here is defined as June-September, when the hottest and driest weather is present. We consider 'borderline' fire season to be the March-May, leading up to fire season. We deem the rest of the year (October-February) non-fire season; wildfires are not impossible in these months, but they are rare.

Comfort Rather Than Critique

It is important to note that a subset of the one-year anniversary coverage (16%) did not raise any wildfire-related policy problems (Tables 2, 5). If stories did not bring up policy problems, it was usually because they focused solely on grieving wildfire losses or celebrating survivors. These articles were likely to be framed episodically, and to relay the stories of individuals rebuilding homes and grappling with post-wildfire trauma (Table 4). This roughly one-quarter of anniversary coverage focused on helping community members within the WUI.

RQ2: How are multiple catastrophic wildfires (in the form of simultaneous wildfires and recurring wildfires) commemorated in local media?

The Front Range's unfortunate reality of having two simultaneous catastrophic wildfires in June 2012, followed by a third in June 2013, created unique conditions for commemoration, which we analyze here via our anniversary-only sample. In that sample, comparisons made between recurring wildfires in the same community were much more frequent than those made between simultaneous fires across communities. Indeed, Colorado Springs' back-to-back wildfires appear to have inspired a unique critical discourse moment of learning and adaptation in 2013, as community members faced the consecutive and compounded devastation associated with two catastrophic socio-natural disasters in as many years. Here, we address that critical discourse moment, and the specific formulations of mediated prospective memory that comprised it. We also describe its later undoing, as wildfire anniversary coverage faded in 2014 and 2015 (Table 2) and residents raced to achieve nearly status quo WUI conditions.

Learning, Adaptation, and Mediated Prospective Memory

The start of the Black Forest Fire on June 11, 2013, inspired many expressions of disbelief in the press, some of which appeared in the Waldo Canyon Fire's one-year anniversary commemorations. Even the El Paso County Sheriff was quoted as saying, "All I could think about is, this can't be happening again" (Handy, 2013b). These expressions of disbelief prefaced more substantive learning and

adaptation discourse, as back-to-back wildfires provided a powerful impetus for questioning Colorado Springs' relationship to wildfire hazard. This critical discourse moment took place primarily during the commemoration of the Waldo Canyon Fire's one-year anniversary in 2013, as reporters and residents attempted to memorialize one catastrophic wildfire in their community while another burned. It took shape primarily in the form of two mediated prospective memory practices: (1) invoking hindsight as foresight and (2) recognizing a "new normal" that demands future action. Both practices encouraged residents to reflect on past wildfire disasters, consider wildfire as a growing and inevitable risk, and learn from and adapt to it in future practices. Each mediated prospective memory practice is presented below in the form of a representative anniversary story from 2013, followed by an examination of anniversary discourse from 2014 and 2015.

Invoking Hindsight as Foresight

On June 12, 2013, a reporter from *The Gazette* stood on a hillside overlooking the charred Colorado Springs neighborhood of Mountain Shadows with its original developer and a resident in the process of moving into his freshly rebuilt home. Their position on the high ground west of the city also gave them a clear view of a large plume of smoke to the east – the Black Forest Fire, ignited the day prior. In a feature story published on Waldo Canyon's first anniversary, the two men looked back on Mountain Shadows' transition from a WUI cattle ranch to single-family suburban enclave (Vogrin, 2013). With the clarity only hindsight can provide, they reflected aloud on how little thought people had given to wildfire when Mountain Shadows was built in 1987, and even as recently as 2000, when the resident bought his home. In fact, the developer himself expressed regret in mandating the most flammable of landscaping and building materials in the subdivision's original covenants, especially a wood shingle roof requirement. "They were very much in vogue at the time," he said of the wooden roofing. "Turns out that was one of the things that caused a lot of properties to start on fire easily... I thought they were beautiful."

The story arranged the lessons of the Waldo Canyon fire in a hindsight-as-foresight framework of mediated prospective memory-making. The developer and resident contemplated the mistakes of previous decades in the context of the in-progress Mountain Shadows neighborhood rebuild, using the past to make a case for what should be done, and still needed to be done, in terms of hazard mitigation for the future. All of the new homes were being rebuilt with fire-resistant roofing, decking, and siding materials, as per Colorado Springs' recently updated building codes for new construction, which had rendered all of the developer's original covenants illegal.

A number of the thematically framed stories published during the Waldo Canyon Fire's one-year anniversary similarly invoked hindsight as a method for conveying the inevitability of wildfire and reminding community members of the mitigation work left to do in the Colorado Springs WUI. One story deemed Black Forest and Mountain Shadows as places that "for years have been identified as disasters waiting to happen" (Handy & Wells, 2013). Another highlighted the continued presence of wildfire hazards in the city's WUI, saying that the Waldo Canyon Fire "served as a scary warning" for the thousands of people living in its unburned southwestern end (Chacon, 2013). A resident working on wildfire mitigation in the city's southwestern WUI expressed anxiety that only a fraction of land had been thinned and pruned there, and said he hoped "the good Lord would take care of it" for the time being.

Recognizing a "New Normal"

The day after the Black Forest Fire started, a group of community historians met in a different Colorado Springs location – at the city's downtown Pioneer Museum – and asked themselves whether they should cancel the opening of a Waldo Canyon Fire memorial exhibit. Their consternation became the subject of a second *Gazette* feature story that attempted to commemorate the Waldo Canyon Fire as the Black Forest went up in flames (Handy, 2013b). In this story, local historians contemplated aloud their bewilderment at such an unfortunate turn of events, as well as their previous assumption that

catastrophic wildfires hit only every 50 years. The “perplexed historians” wondered how they would adjust to their city’s increasingly stochastic future. At press time, they had taken the initial step of delaying the exhibit’s opening, but they had not decided what to do from there.

The article’s author put the new circumstances more dramatically. “El Paso County’s historical trajectory has taken a sharp turn, into a new realm,” she wrote. “From this point forward, the community’s biggest milestones – the gold rush, the arrival of the military, the growth and collapse of the economy – will now count among them the deaths of four people and the destruction of nearly 900 homes in one year.” The article, and others after it, asked what back-to-back catastrophic wildfires meant for Colorado Springs. The stories came up with a common answer: the dawning of a “new normal” of increased wildfire hazard wrought by too many years of suppressing wildfire, too much human development across an incendiary landscape, and a warmer and drier climate.

Like the hindsight as foresight discourse above, the “new normal” framework for mediated prospective memory-making also portrayed wildfire as inevitable and an increasing risk, and also directly linked past catastrophic wildfires to the need for future hazard mitigation. In the words of the *Gazette’s* editorial board, “We must no longer hope that wildfires are a distant ‘maybe someday’ type of threat. We must acknowledge that they pose a constant threat and live accordingly. We must accept these fires as the new normal and hope that we are wrong” (2013). The editorial board highlighted tree thinning, creating defensible space around homes, and revising land use and building codes as important mitigation measures.

Racing Toward Recovery

Surprisingly, the back-to-back fires in Colorado Springs also inspired anniversary stories that contradicted the learning and adaptation discourse described above by setting up a comparative framework between the burn zones centered upon which area was rebuilding more quickly and completely. These comparisons began in the 2013 anniversary coverage and intensified in 2014 and

2015. Importantly, these rebuilding comparisons, often framed in terms of competition, appeared across all three newspapers in the sample. Comparisons between the Waldo Canyon and Black Forest recoveries were most common, especially in the *Colorado Springs Gazette*, but they were not the only ones made. Articles in the *Denver Post* and the Fort Collins *Coloradoan* also made rebuild comparisons among those fires and High Park, as well as other past fires in the state.

Most of these stories celebrated the remarkably speedy rebuilding of the neighborhood of Mountain Shadows, mentioned above, positioning it as a high bar against which to compare all other recoveries. The peak of these plaudits came in 2013, when *The Denver Post* published a story comparing the neighborhood to a “phoenix rising from the ashes” (Meyer, 2013b). The Colorado Springs fire marshal told the newspaper that it was fast becoming a national model for wildfire recovery. Although the Black Forest Fire had only been contained five days earlier, local officials said they were using Mountain Shadows as a record to beat. A regional planning official put it this way: “I never really anticipated Waldo coming back as fast as it did, but it's like anything: You get off to a good start, and you always seem to win the race. We are actually getting a better start in Black Forest.”

By 2014, the Mountain Shadows success story had been further cemented into commemorative discourse, but this time the stories were not entirely complimentary. The *Gazette* published a story that heralded the neighborhood’s now 77% rebuild rate as higher than “any other fire-ravaged community in the state” (Handy, 2014). But then the article pivoted toward potential implications – noting that even though all 250 new homes had been built with fire-resistant materials, many had also been rebuilt bigger, into “McMansions,” in the words of one resident. According to the county assessor, Mountain Shadows homes had been rebuilt an average of 14% larger, leading property values in the charred neighborhood to actually *increase* after the wildfire. Neighbors celebrated the upscaling. “It’s like go big or go home. It's great,” said one resident. But several academics quoted in the news questioned the long-term wisdom of adding more fuel to the landscape in the form of bigger houses, stucco-clad or

not. The story also quoted two homeowners who could not bear to return, holding them up as the exception to the other 77%.

Such critiques did not last into 2015, however. By the third anniversary of Waldo Canyon and the second anniversary of Black Forest, the only comparisons being made between the wildfires were about rate and speed of rebuilding, with Black Forest featured in second place at 57% rebuilt two years post-fire. Any invocations of mediated prospective memory linking past wildfires to future hazard mitigation had faded (see also Table 5 and the fading of causal policy problems from 2013-2015). County assessors continued to express amazement at climbing Mountain Shadows property values. Said one Mountain Shadows resident from her new front porch, "In some ways, things are better now... Some people complain because the neighborhood doesn't look identical to what it was. Why would we want it to look identical? We all have better houses now" (St. Louis-Sanchez, 2015).

DISCUSSION & CONCLUSION

This analysis launched from the premise that, in order to learn from and adapt to catastrophic wildfires, communities must acknowledge wildfire's combined human-natural causes and work to mitigate them. More specifically, this analysis investigated the role of local media in community-level wildfire learning and adaptation in the context of wildfire hazard mitigation across the disaster cycle. On a practical level, we asked whether the anniversaries of catastrophic wildfires serve as critical discourse moments for learning and adaptation. On a theoretical level, we explored how the media connects past events to the future public agenda in the context of simultaneous and recurring socio-natural disasters. This discussion takes up each level of inquiry in turn.

Based on our results, the answer to the question of whether anniversaries serve as critical discourse moments for wildfire learning and adaptation at the community level is both "yes" and "no." In the affirmative, our data confirm the importance of disaster anniversaries as unique timeframes for negotiating the meanings of past disasters and their implications for the future. Stories commemorating

the Waldo Canyon and High Park wildfires at their one-year anniversaries were more likely to grapple with the combined human-natural causes of catastrophic wildfires, and what should be done about them, than stories published during the rest of the disaster cycle. This was partly because these stories were more likely than others to be framed in a thematic style. Such framing allowed journalists to place the wildfires in broader context, which created discursive space for the critique of *causal* policy problems, such as the rapid development of Colorado's WUI, and a focus on hazard mitigation.

The surprise of back-to-back wildfires in June 2012 and 2013 in Colorado Springs further inspired learning and adaptation discourse in the form of two mediated prospective memory practices. Many of the stories that memorialized the one-year anniversary of the Waldo Canyon Fire as the Black Forest burned (1) used hindsight as foresight or (2) identified a more incendiary "new normal" as ways of diagnosing worsening wildfire conditions and calling for future mitigation action. Both mediated prospective memory practices cast wildfire as an inevitable and increasing threat and conveyed a new sense of urgency around mitigation. These unique aspects of wildfire anniversary coverage contribute to what Hilton et al. (1992) called "the progressive localization of cause." As per those who have examined the effects of this more thoughtful reporting style on readers of earthquake stories (Cowan et al., 2002), one would expect the wildfire anniversary coverage to encourage a sense of agency in community members with a role to play in mitigating WUI hazards.

That said, not all of the anniversary coverage was concerned with applying lessons from past wildfires to future hazards. To the contrary, about a quarter of the 2013-2015 anniversary sample could be categorized as formulaic commemorative journalism based on its focus on individual survival stories and affirmation rather than exposition or appraisal. These anniversary articles may be important for learning and adaptation in their own way – potentially by guiding communities in healing (Kitch, 2000) – but they came up short on the metric of reckoning with wildfire's causes and the persistence of wildfire hazard in the WUI. This might be because these survivor stories usually focused episodically on people

who had lost their homes. Discussing WUI homeowners' exacerbation of wildfire hazard in a story focused on an individual's harrowing losses likely sounds too much like victim blaming for most journalists and readers.

As engagement with catastrophic wildfire's more nuanced and systemic causes declined over time, a discourse of racing toward recovery flourished. The media frequently arranged the 2012 and 2013 wildfires in a comparative framework that used the rapidly rebuilt Colorado Springs neighborhood of Mountain Shadows, which burned in the Waldo Canyon Fire, as a yardstick against which the High Park and Black Forest recoveries were measured. Rebuilding efforts in Mountain Shadows reflected real hazard-related improvements in terms of revised building standards, but those mitigation efforts came mixed with larger building envelopes and tighter housing density, both of which increase vulnerability to wildfire (for similar recovery patterns in California, see Simon, 2014). A few 2013 and 2014 stories quoted experts asking whether it was prudent for Mountain Shadows homeowners to be adding more fuel to the landscape over the long-term. By 2015, however, their voices had been replaced by residents celebrating their larger and improved homes, this time built with more fire-resistant materials.

On a more theoretical level, these results are insightful for further developing how the media connects the past to the future in the news and, in keeping, how the media's collective memory work links to its public agenda-setting functions. The local media discourse analyzed here includes two mediated prospective memory practices that expand upon those offered by Tenenboim-Weinblatt (2013): invoking hindsight as foresight and recognizing a "new normal." Both practices go beyond pure remembrance by using past disasters to make a case for that which still needs to happen in the future in terms of addressing increasing and inevitable hazards. One would expect the relevance and use of these forms of mediated prospective memory to grow with increasing human vulnerability and worsening socio-natural hazards in the Anthropocene (O'Brien and Leichenko, 2000).

On the whole, the anniversaries of catastrophic wildfires investigated here appeared to be only partially effective as critical discourse moments for community-level learning and adaptation. That said, it is important to remember that local media are not the only venue for learning and adaptation discourse within a community, and that anniversaries are not the only time periods in which local policy problems are discussed. Future research should address these limitations by assessing learning and adaptation discourse in additional community-level contexts (e.g., city council meetings). Future work should also test these results in locations beyond Colorado, in other disaster contexts, and at major later anniversaries (5-years, 10-years, etc.). Going further, experimental methods could be used to examine whether wildfire anniversary stories such as those studied here affect readers' sense of agency in the face of catastrophic wildfire and, further still, whether they inspire actual mitigation activity on the ground.

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