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Monster wildfires and metaphor in risk communication

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Abstract

This work examines the use and understanding of metaphor in wildfire discourse. We focus on the framing of wildfires as monsters, seen in statements such as “*Monster wildfire rages in Colorado*” and “*Two monster wildfires in Northern California are slowly being tamed,*” which reflect a “*WILDFIRE IS MONSTER*” metaphor. Study 1 analyzes how and when this phrase is used in TV news reports of wildfires, and Study 2A and Study 2B investigate how it influences reasoning about risks associated with wildfire. The results show that metaphor is widely used in framing news reports about significant wildfires, and that its use influences how people reason about them. The work is part of a project aimed at developing better ways to communicate about risks related to natural events and climate change.

Introduction

Metaphor is the heart and soul of language and thought. It is grounded in our most basic embodied experiences and interactions in the world (Gibbs, 1994, 1996, 2011; Kövecses, 2000; Lakoff & Johnson, 1980). Metaphor helps us make sense of abstract or complex things, including time (Clark, 1973), economics (Henderson, 1982), mathematics (Lakoff & Núñez, 2000), chemistry (Watkins, 1989), physics (Pulaczewska, 1999), medicine (Coulehan, J. (2003), electricity (Genter & Genter, 1983), politics (Lakoff, 2008), and even horror movies (Winter, 2014). It is known to influence our reasoning about real world problems, such as cancer (Gibbs & Franks, 2002; Pensen, Schapira, Daniels, Chabner, & Lynch, 2004), crime (Thibodeau & Boroditsky, 2011), and climate change (Flusberg, Matlock, & Thibodeau, 2017). Still, little is known about how metaphor works in framing messages about real world situations that involve risk and uncertainty .

In this article, we examine metaphor in wildfire communication. Wildfires are increasing in frequency, magnitude, and duration, and posing greater and greater risks to humans, structures, landscapes, and the environment (Westerling, Hidalgo, Cayan, & Swetnam, 2006; Westerling 2016). Once a wildfire starts, people in its vicinity struggle to assess how much risk is involved in the situation at hand, and decide what to do and not do, for instance, whether to stay put and protect their home and land or immediately evacuate the area. Their ability to reason clearly is affected by many factors, such as subjective knowledge of wildfire risk, emotionally driven inferences about potential loss and damage, assumptions about wildfire preparedness, and gender (see Ericksen, 2013; Martin, Bender, & Raish, 2007). Moreover, people's perceptions of wildfire

risk may also diverge from those of fire managers and firefighters (Cohn, Carroll, & Kumagai, 2006).

Communication is an important part of wildfire suppression and safety. It influences how people react to a wildfire, including their willingness to contribute to fire prevention efforts, for instance, clearing brush (Steelman & McCaffrey, 2013). Because television and other media have a significant impact on perception and assessment of wildfire risk (Carroll & Cohn, 2007), it is useful to study how wildfires are described in the media, and how messaging, including messages framed with colorful metaphors, influences everyday reasoning about risk. More generally, it is informative and useful to do research on how metaphor is used in natural discourse and in various domains (see Gibbs, 1999). To obtain a better understanding how metaphorical information is used to frame wildfire information, and what affect it has on perception of risk, we ran three studies. In Study 1, we did a corpus analysis of how the phrase “*monster wildfire*” is used in television news reports of wildfires. In Study 2A and Study 2B, we used surveys to investigate how framing a fire as a “*monster wildfire*” (metaphorical framing) or a “*major wildfire*” (not metaphorical framing) affects perception of risk. Before discussing these three studies, we provide background on metaphor and wildfire to motivate the research.

Overview of wildfire and metaphor

Metaphor is pervasive in wildfire discourse. The popular media frequently characterizes wildfires as monsters, as in “*Monster wildfire rages in Colorado*” (Christian Science Monitor, 2012) and “*Oklahoma firefighters are struggling to douse monster wildfires*” (NBC News, 2016). This framing reflects an entrenched way of conceptualizing and discussing wildfires in terms of out of control volitional agents who have the ability to initiate and enact dangerous,

destructive actions against humans, structures, and landscapes. Describing wildfires in this way has become popular in the early 21st Century, especially in news reports about extreme wildfires. (A Google n-gram search for “*monster wildfire*” shows it was rarely used prior to 2000.) This no doubt reflects a general tendency to assign human-like attributes to non-living entities, including the ability to travel, to consume, and to destroy (see Epley, Waytz, & Cacioppo, 2007, for discussion).

With this monster framing, wildfires are depicted as agentive beings that willfully and purposefully travel across physical space, as in “*California town burns as treacherous wildfire marches on*” (World News, 2015). They are described as moving quickly, as in “*Monster wildfire races through Yosemite*” (CNN, 2013), or slowly, as in “*Flames from a 30,000-acre wildfire crawled to within miles of 700 hillside homes across the foothills*” (Daily News, 2002). They are said to run like football players or other athletes, as in “*It dashes erratically this way and that, like a running back punching for open field*” (The Charlotte Observer, 2016). They can fly, as in “*There was no time to use the pressurized water system before the fire flew into the tree tops*” (Milwaukee Sentinel, 2013), and they can move forcefully, as in “*A fast moving wildfire tore through the woods in Yazoo County*” (Mississippi News Now, 2017). They can be portrayed as entities that pursue humans, as in “*A wildfire chased residents from 140 homes in a tiny Colorado town this week*” (Associated Press, 2016). Like fugitives, they can be on the run and hide out, as in “*Wildfire on the run at Fort McMurray*” (CBC News, 2016) and “*It burrows beneath swaths cut to contain it*” (Charlotte Observer, 2016). And they can be pursued and trapped like living beings, as in “*More than 900 firefighters have spent the week trying to keep a potential monster wildfire trapped on the face of the Mogollon Rim*” (Payson Roundup, 2017).

With this framing, wildfires can also be characterized as hungry beings that devour land and structures, as in *“Fort McMurray [fire] has eaten up more than 1,500 square kilometres of northern Alberta forest”* (Huffington Post, 2016); *“A monster fire swallowed up a large commercial building...”* (NBC, 2016); and *“A wind-fueled wildfire gobbled up more acreage Tuesday afternoon...”* (The Blue Marble, 2012). More colorful examples refer to chewing or gnawing sections of cities or even animals, as in *“The 75-square-kilometre fire [...] chewed up sections of the city's south and southwest Tuesday”* (Journal Pioneer, 2016) and *“We just wanted to make sure some animals didn't get chewed up”* (Calgary Metro, 2016), or to spitting things out, as in *“By Monday, the region's prolonged drought and extreme winds were causing the fire to spit out embers that quickly ignited numerous new fires”* (WRCB, 2016).

Wildfires are also portrayed as creatures that can threaten living beings and instill fear, as in *“Monster fire terrorizes a Colorado city* (CNN, 2012),” *“Wildfire beast threatens 10,000 Idaho homeowners”* (Boise Weekly, 2013), and *“[It] has even spooked the hardy, reclusive mountain coyotes”* (The Charlotte Observer, 2016). They ravage humans and land, as in *“More than 200 residents of two communities ravaged by a wildfire along eastern slope of the Sierra Nevada”* (Associated Press, 2015), and *“Wildfire ravages Big Sur Hills”* (CBS, 2008). They are like out of control animals, as in *“A ferocious wildfire wreaking havoc in Canada doubled in size”* (AFP, 2016), to be tamed by firefighters, as in *“Two monster wildfires in Northern California are slowly being tamed”* (USA Today, 2015). These wildfires even acquire the names of famous monsters in some cases, as in *“Fire season is a real, palpable thing that rises up like Godzilla from the sea every spring”* (Santa Maria Times, 2013).

This general way of talking reflects a conceptual metaphor “*WILDFIRE IS MONSTER.*”

When people describe wildfires as monsters, they tap into shared cultural knowledge of what monsters are and what they can do. Monsters are not real, but they are viewed as evil and destructive volitional agents. They are large, scary, and erratic. They are mysterious, and evoke fear and anxiety. They carry out actions that lead to deadly outcomes (for discussion, see Ingebretson, 2001). The belief system we share about monsters----which emerges from movies, myths, fairy tales, comics, and scary video games----serves as a good source domain for structuring our understanding of wildfires. They, too, are large, unpredictable, and destructive. Monster wildfires are also portrayed as enemies to fight, as reflected in a related metaphor, SUPPRESSING FIRE IS A BATTLE, and as seen in statements such as “*More than 1,500 battle monster California wildfire*” (NBC News, 2016), “*Firefighters doing hand-to-hand combat with wildfires in the west*” (CNN, 2000), and “*Rabun firefighters knock down rash of fires*” (Clayburn Tribune, 2017). In such cases, wildfires are depicted as opponents to be overtaken and destroyed before they cause further damage.

In the next section, we analyze of the use of “*WILDFIRE IS MONSTER*” in television news broadcasts of wildfires to get a sense of how and when the phrase “*monster wildfire*” is used in the popular media.

Study 1: Analysis of “monster wildfire” in television news reports

Interested in how “*monster wildfire*” is used in the popular media, especially in news reports, we searched for all instances of this phrase in a large archive of television news broadcasts. The TV News Archive offers free online access to hundreds of thousands of hours of clips of recorded news broadcasts, and corpora can be created with closed caption data by searching words and

phrases. Our corpus contained 124 sentences that contained “*monster wildfire*” in broadcasts that aired between June 2009 and June 2015.

To get a sense of how “*monster wildfire*” was used in news reports, we first examined who used it and when it was used. All 124 instances of it (100%) were generated by reporters or anchorpersons (not firefighters, not bystanders, etc.). Most the time (92%) “*monster wildfire*” occurred in the opening statement of a story. In one news clip, for instance, an anchor opened a story with, “*A monster wildfire inching closer to Los Alamos National Laboratory,*” and then proceeded to give information about risks associated with radioactive materials stored at the location. In another, the anchor opened the news story with, “*A monster wildfire in Colorado turning deadly this morning,*” and then reported specific information about the fire, including the discovery of a charred body.

Second, interested in learning about how actions associated with extreme wildfires are construed, we analyzed verbs co-occurring with “*monster wildfire*”. The analysis included finite verbs, as in “*A monster wildfire is burning in the Los Angeles area,*” and non-finite verbs, as in “*A monster wildfire in Colorado turning deadly this morning.*” We categorized statements according to whether the wildfire was the agent doing the action or not. About 76% of the time (94 of 124 instances) monster wildfires were as agents, for instance, “*The monster wildfire near Yosemite National Park is challenging firefighters in every way*” and “*this morning the monster wildfire that's already claimed so many homes is now a killer.*” In these cases, the fire was carrying out the action. The rest of the time, the wildfire was the recipient of actions carried out by other entities, as in “*Firefighters are still trying to contain a monster wildfire*” and “*Farther north it is the lack of water that is causing monster wildfires.*”

Third, we analyzed the actions (verbs) of monster wildfires as agents. About 21% of all 94 agentive statements in our corpus explicitly referred to burning, as in “*A monster wildfire continues to burn in the northeastern part of the state.*” About 21% of these statements mentioned destruction, and of these, about 75% mentioned deadly outcomes for humans, as in “*A monster wildfire in Colorado turning deadly,*” and the remaining 25%, the destruction of structures, as in “*the monster wildfire that’s already claimed so many homes.*” About 16% of all agentive cases described the wildfire as expanding, as in “*That monster wildfire east of Sacramento, the King Fire, has now grown to nearly 140 square miles.*” About 13% of all agentive cases portrayed the wildfire as threatening, as in “*Monster wildfire burning near Yosemite is threatening 200 homes, hotels, and camp buildings.*” Another 12% described a fire as angry, as in “*A monster wildfire continues to rage.*” An additional 12% described it as moving in various ways, for instance, quickly, as in “*Monster wildfire racing through southwest New Mexico [...],*” and slowly, as in “*Monster wildfire is creeping further into the iconic Yosemite National Park.*” About 5% of the remaining statements referred to a monster fire that was forcing people to evacuate, as in “*A state of emergency in Southern California as a monster wildfire forces thousands of people to flee their homes.*”

The next part of our analysis focused on the 30 instances in which wildfires were affected by the actions of others, either humans or natural causes. Most statements referred to extinguishing wildfires, either containing them (53%), as in “*Firefighters are still trying to contain a monster wildfire in New Mexico,*” or battling them (27%), as in “*The state deploys all its resources to attack a monster wildfire.*” Others referred to starting or fueling wildfires (20%), as in “*We have dry heat and high winds that continue to fuel a monster wildfire in Arizona.*”

To gain an even better understanding of monsters as wildfires in television news, we analyzed images that occurred in the context of “*monster wildfire*.” In doing so, we discovered that most the time (about 98%) the news broadcast showed a fire in progress, for instance, a video of a heavily wooded area on fire or a close up of a building burning. Video clips of a fire in progress often occurred at the same time as the opening statement or immediately followed a brief shot of the news presenter. There were only two instances in which a video clip of a fire in progress was not shown (2%). One featured a photograph of a crew of firefighters who had been killed by a fire weeks earlier, and the other, a video clip of President Obama walking through an area that had been devastated by a recent fire. In both cases, focus was on end results.

Our corpus analysis revealed that news presenters often use “*monster wildfire*” when introducing a wildfire story. In doing so, it is reasonable to assume that they are encouraging people to think about fear, damage, and destruction. They also talk about these monster fires as being highly agentic and capable of initiating and carrying out destructive actions that harm humans, structures, and land, and as moving through space in various ways. The visual images along with such fires emphasize the dynamic, ongoing, lifelike nature of fires.

Study 2: Behavioral studies on “monster wildfire” and reasoning about risk

There is now good behavioral evidence to support the idea that metaphor can have a powerful effect on everyday thought. It can systematically influence how people reason about situations, states, and events in the world. It can affect how they think about crime (Thibodeau, 2016; Thibodeau & Boroditsky, 2011). It influences how they reason about impacts of climate change (Flusberg et al., 2017). It can also affect how people reason about social and political issues such

as immigration (Landau, Sullivan, & Greenberg, 2009). It can even affect how people perform basic physical actions, such as walking in a straight line (Gibbs, 2012).

To gain deeper insights into how metaphor might affect reasoning about wildfires, we ran two behavioral studies. In completing each of these surveys, participants first read about a wildfire described as a monster (or not a monster) and then answered questions that were designed to test perceptions of risk.

Study 2A

Our study targeted three important dimensions of wildfire risk perception, precisely, destruction of land, destruction of houses, and loss of lives (for discussion of these risks, see McCaffrey, 2008). It also examined willingness to evacuate the area in the vicinity of a wildfire. Our hypothesis was that describing a fire as a monster wildfire would cause people to perceive greater risk than framing it as a major wildfire.

We administered the survey to 101 undergraduate students at the University of California, Merced. All completed the survey online, and received extra credit in a social sciences course. Most participants were female (73%), and most, native English speakers (73%). A large majority reported having grown up in California (96%). Each person was randomly assigned to one of two conditions, metaphor or non-metaphor. The 52 people in the metaphor condition read a passage about a nearby wildfire that was described in terms of the WILDFIRE IS MONSTER. The 49 people in the non-metaphor condition read a passage about a nearby wildfire that was described without the metaphor “*WILDFIRE IS MONSTER*” framing. Both passages contained 79 words, and conveyed identical information except for the presence or absence of metaphor. The metaphor

passage contained phrases that portrayed the fire as a monster that did actions associated with monsters, such as “*monster fire*”, “*swallowed several houses*”, and “*devour even more land and homes.*” The non-metaphor passage featured phrases such as “*major wildfire*”, “*burned several houses*”, and “*burn even more land and homes.*” Figure 1 displays the metaphor and non-metaphor passages.

Figure 1. The wildfire passages people read in Study 2A

No Metaphor

You live in a small town in a rural area. After noticing a smoke cloud on the horizon, you turn on the TV and learn that a wildfire has started 20 miles up the hill. The reporter states, “This major wildfire is burning fast. It has already burned many acres of forest land and has burned several houses. There’s concern that this fire could extend to the edge of town, where it would burn even more land and homes.”

Metaphor

You live in a small town in a rural area. After noticing a smoke cloud on the horizon, you turn on the TV and learn that a wildfire has started 20 miles up the hill. The reporter states, “This monster wildfire is moving fast. It has already eaten up many acres of forest land and has swallowed several houses. There’s concern that this monster could reach the edge of town, where it would devour even more land and homes.”

Immediately after reading either the metaphorical or non-metaphorical passage, people answered questions that were intended to target perceptions risk related to wildfires, specifically, attitudes about the destruction of land (Question 1), the destruction of houses (Question 2), the loss of lives (Question 3), and whether or not to evacuate (Question 4). For responses to the first three questions, we encouraged people to provide a numeric value (e.g., “25” for estimated number of houses that were destroyed).

Prior to analyzing responses to questions, we converted all unquantifiable responses (e.g., “N/A”, “many”, “few”) to blank cells in the dataset. Such responses accounted for about 4% of all responses for Question 1 (acres), about 6% of all responses for Question 2 (homes), and about 3% of all responses for Question 3 (lives). In addition, for Question 1 and Question 2, we converted all responses of “0” or “1” to blank cells. Such responses were deemed erroneous because those same participants had read about a wildfire that had “already burned many acres of forest land” as well as “several houses.” Those erroneous cases accounted for about 7% of all responses for Question 1, and about 7% of all responses for Question 2. For our analyses of Questions 1, 2, and 3, we used independent t-tests, and for our analysis of Question 4, we used chi-square tests, standard tests for comparisons.

Question 1. “How many acres were burned in the end?”

The results of Question 1 revealed that people who had read the passage about the monster wildfire (metaphor condition) gave reliably higher estimates for number of acres burned ($M=2906.68$ acres, $SE=783.24$) than did people who had read about a major wildfire (non-metaphor condition) ($M= 19.22$ acres, $SE=1.57$), $t(84) = 3.87$, $p < .0001$ (two-tailed).

Question 2. “How many homes were destroyed in the end?”

On average people who read the metaphor passage estimated that more homes were destroyed ($M=70.66$ homes, $SE=23.49$) than did the people who read the non-metaphor passage ($M=22.33$ homes, $SE=4.21$), $t(85) = 2.00$, $p = .048$ (two-tailed).

Question 3. “How many lives were lost, if any?”

People who read about a monster wildfire provided higher estimates for number of lives lost ($M=17.43$ lives, $SE=5.79$) than did people who read about a major wildfire ($M=3.12$ lives, $SE=.83$), $t(95) = 2.57$, $p = .01$ (two-tailed).

Question 4. “Would you choose to evacuate if you were in this situation?”

People who read about a monster wildfire were more likely to indicate they would evacuate (100%) than people who read about a major wildfire (90%), $\chi^2(1)=4.96$, $p=.03$ (Pearson Chi-square, two-sided).

The results of Study 2A suggest that reasoning about metaphorical framing enhanced perceptions of risk, leading to larger estimates for number of acres burned (Question 1), houses burned (Question 2), and lives lost (Question 3), and leading to greater likelihood of opting for evacuation (Question 4).

Study 2B

In this study, we investigated how reasoning about risk would be affected by limited metaphorical information, precisely, only the term “*monster wildfire*” (versus “*major wildfire*”). A total of 151 UC Merced undergraduates participated for extra credit in a course, and completed the survey online. They read one of the passages (both contained 28 words) shown in Figure 2 before answering the questions used in Study 2A. Most were female (77.5%), and most were native English speakers (73%). Nearly all 99% reported they were from California.

Figure 2. The wildfire passages used in Study 2B

No Metaphor

You live in a rural area. After noticing a smoke cloud about 20 miles away, you turn on the TV and learn that a major wildfire has started.

Metaphor

You live in a rural area. After noticing a smoke cloud about 20 miles away, you turn on the TV and learn that a monster wildfire has started.

Question 1. “How many acres were burned in the end?”

People who read about a monster wildfire provided reliably higher estimates for number of acres burned ($M=2097$ acres, $SE=506.49$) than did people who read about a major wildfire (non-metaphor condition) ($M= 103.3$ acres, $SE=35.25$), $t(143) = 3.79$, $p < .0001$ (two-tailed).

Question 2. “How many homes were destroyed in the end?”

Reading about a monster wildfire led to reliably higher estimates about houses destroyed ($M=222.13$ homes, $SE=95.14$) than reading about a major wildfire ($M=15.35$ homes, $SE=2.83$), $t(149) = -2.19$, $p = .03$ (two-tailed), and with equal variance not assumed, $t(74) = -2.17$, $p = .03$.

Question 3. “How many lives were lost, if any?”

In this case, there was merely a trend toward higher estimates for number of lives lost for reading about a monster wildfire ($M=58.65$ lives, $SE=41.73$) than reading about a major wildfire ($M=4.10$ lives, $SE=1.04$), $t(149) = 1.32$, $p = .19$ (two-tailed).

Question 4. “Would you choose to evacuate if you were in this situation?”

People who read about the monster wildfire were more likely to say that they would evacuate than those who read about the major wildfire. About 91% of the people in the metaphor

condition (68 of 75) responded “yes” compared to about 79% of the people in the non-metaphor condition (60 of 76) who responded “yes”, $\chi^2(1)=4.02$, $p=.045$ (Pearson Chi-square, two-sided).

The results of Study 2B were consistent with those of Study 2A. Even with limited metaphorical information about a wildfire people’s perceptions of risk were enhanced, leading to larger estimates about acres burned (Question 1), houses burned (Question 2), and lives lost (Question 3, trend only). This framing also resulted in greater likelihood of opting for evacuation (Question 4).

Discussion

This research explored how metaphor is used in wildfire communication. The results of Study 1 reveal that “*monster wildfire*” is often used to frame television coverage of wild fires---the phrase often appears at the beginning of a news story. This framing makes sense. Even though monsters are not real, they imply danger and uncertainty, and instill fear. News presenters describe these monster wildfires as volitional beings that can initiate and carry out actions, such as willfully and purposely moving across the land, threatening humans, eating structures, and overtaking fire crews. The results of Study 2A suggest that monster wildfires that eat acres and swallow houses can cause people to consider evacuation and anticipate greater damage and destruction than a major wildfire that is burning acres and houses. The results of Study 2B indicate that this is the case even when metaphorical information is quite limited, precisely with “*monster wildfire*” only. Together, the results of Study 2A and Study 2B are consistent with other work on metaphorical framing, including Gibbs (2012), Thibodeau (2016), Thibodeau and Boroditsky (2011), Flusberg et al. (2017), and Lee & Schwarz (2014). They provide further

evidence that metaphor shapes how people make sense of things, form attitudes and opinions, and take action in the world (see also Lakoff, 1991, 2014; Lakoff & Wehling, 2016; Landau, Robinson, & Meier, 2014; Matlock, 2012).

The effects that monster framing has on reasoning about wildfire risk can be partly explained by dynamic simulation, a mechanism that drives figurative and non-figurative language and thought (see Bergen, 2012; Gibbs, 2006; Gibbs, Gould, & Andric, 2006; Gibbs & Matlock, 2008; Lakoff, 2012). It is not unreasonable to assume that people tacitly simulate certain properties, states, and actions associated with monsters while interpreting descriptions of monster wildfires—for instance, their destructive, erratic nature—and that this drives how they assess what damages may or may not occur in the immediate future, and consider what they should do or not do in response. The results can also be explained by the role of emotions in general risk perception (see, for instance, Slovic & Peters, 2006). Though monsters are not real, language about them can generate fear and anxiety, especially in the context of a factual news report, and this in turn may figure into perception of risk. In addition, the use of metaphor (above and beyond a monster framing) can often make information seem more vivid (see Brann, 1993; Kövecses, 2000; Lakoff & Johnson, 1980; Taylor, 2002).

How might these results help improve risk communication, especially wildfire risk? As wildfires increase in frequency, magnitude, and duration (Westerling et al., 2016), with climatic changes such as more variable precipitation and warmer temperatures, risks will become even greater and create even more problems for humans, especially those residing at the wildland-urban interface (Westerling & Bryant, 2008). Using metaphor, such as a monster framing, may be useful in grabbing people's attention once a fire starts, and possibly even in encouraging fire

prevention practices, such as brush clearing (see Cohn, Carroll, & Kumagi, 2006). Starting at an early age, people fear monsters even though they know they are entirely imaginary (see Harris, Brown, Marriott, Whittall, & Harmer, 1991). Thus, portraying wildfires as monsters may be helpful to educating children about wildfire prevention. Little is known about how messaging affects how children reason about environmental risks (Ramanathan, Han, & Matlock, 2017).

In this article, we focused on the use and interpretation of “*monster wildfire*” in wildfire messaging. Future work could examine a wider range of metaphorical language in this domain, and how this metaphor is extending in the media and everyday use. The term *beast* is also frequently used to describe wildfires, as in “*Alberta battles The Beast, a fire that creates its own weather and causes green trees to explode*” (Edmonton Journal, 2016). The same (Fort McMurray) fire was also referred to as a giant, as in “*Canada wildfire: why a sleeping giant awoke in Alberta and became relentless*” (The Guardian, 2016). Some wildfires have been described as zombies, as in “*From any angle, this monster wildfire east of Fresno is a zombie*” (Fresno Bee, 2015). Wildfires are also described as dragons, as in “*The fire was like a big dragon out there, and you knew it was coming*” (Knoxville News Sentinel, 2017).

And to get a better sense of how metaphorical instances of *monster* are used and how they are interpreted, it will be useful to examine its use in various domains, not just in the context of wildfire messaging. The term also refers to criminals convicted of violent crimes (Douard, & Schultz, 2012; Ingebretson, 2001). Convicted murderer Michele Anderson referred to herself as a monster when confessing to killing six family members (Fox News, 2016). Similarly, Steven Avery, convicted of sexual assault and attempted murder, was called a monster by his former fiancée (Daily Mail, 2016). Politicians with questionable morals, such as Donald Trump, are

sometimes referred to as monsters. Early in his 2016 campaign, he was referred to as a monster by other GOP party members, e.g., “*Welcome to Zombieland: GOP fears Trump is a monster it can’t kill*” (Boston Globe, 2016), for defending a campaign aide who had been arrested for battery and for mocking a political opponent’s wife. In later months, he was described as a “*swamp monster*” and “*creature from the Black Lagoon in the Whitehouse*” (Washington Post, 2017). Not unlike the actions of wildfires, actions of human monsters can be erratic and harmful. The term “*monster*” can also refer to athletes, including football players, as in “*Green had an impressive offseason on the camp scene and is a monster in the trenches*” (CBS Sports, 2017) and to musicians, including guitarists, as in “*Given the shred craze of the time, it was fitting that Holdsworth was paired with monster guitarist Frank Gambale*” (Premiere Guitar, 2017).

It would also be informative to track how metaphor influences reasoning over time and space in wildfire reporting. Might the potency of framing wildfires as monsters diminish with frequent use in the media, and if so, when? And exactly when and how does it arise? Metaphor can emerge when there is a need to explain something complex or abstract, or when there is a need to create a particular feeling (see Kövecses, 2015). A modern example of this is seen in the language we use to talk about the Worldwide Web. Metaphorical descriptions of web searches changed over the past 20 years, partly because technology has improved and search is easier and faster. Because there is less need now for detailed descriptions about how searches are made, certain language about “motion” from one website to another has vanished (see Matlock, Castro, Fleming, Gann, & Maglio, 2014). The use and understanding of terms such as “*monster wildfire*” may also vary across geographical regions. Such language may have less influence on reasoning about risk in individuals residing far from wildland fire areas.

Our approach of analyzing news reports and conducting behavioral studies could be applied to the communication of other extreme events. The terms *monster* is also used in descriptions of disasters and natural events, such as hurricanes, tornados, heat waves, and snowstorms, as in “*Hurricane Sandy may slam into East Coast as Halloween week ‘Frankenstorm’*” (CBS News, 2012); “*Monster tornado hits Manitoba*” (Huffington Post, 2015); “*A monster heatwave is currently ravaging parts of New South Wales*” (Gizmodo, 2017); and “*Snowzilla slams East Coast*” (U.S. News & World Report, 2016). Yet nothing is known about what effect metaphorical framing may have on willingness to seek shelter and other aspects of disaster behavior. Such work might also tell us more about reasoning about natural phenomena that extend over long time periods. Extreme droughts have been described as monsters or beings that create damage, for instance, “*California’s monster drought drifts into its fourth year*” (KQED) and “*Killer drought cripples crops*” (UPI, 1974).

Some attention has been given to the utility of metaphor in environmental communication (e.g., Lakoff, 2014; Larson, 2011; Nerlich & Jaspal, 2012), but far more work is needed before we reach a decent understanding how metaphor influences the perception of risk in this and other domains, and how it might help people choose the best course of action. It will be interesting to see how new metaphorical uses of “*monster*” evolve, take hold, and play out over time in discourse related to climate change.

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