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Fire as an aesthetic resource in climate change communication: exploring the visual discourse of the California wildfires on Twitter/X

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This article uses the case study of the California wildfires of 2020/2021 to examine the visual discourse on fires on social media and investigate how it was harnessed by environmental activists to shape narratives and meanings regarding climate change. The article draws on two datasets scraped from Twitter/X (350 images), i.e. the visual discourse of the California wildfires (250 images) and the visual data of environmental NGOs (100 images). Our findings show that the general visual discourse evokes the impact, risk, and devastation of wildfires. In contrast, in the second visual discourse, civil society deploys fire as an aesthetic resource to communicate danger but also makes an explicit connection between wildfires, climate change and fossil fuel reliance. Hence, our article highlights an urgent challenge in climate crisis communication: how to make an explicit causal link between wildfires and climate change through the use of visual images of fire. This challenge is exacerbated by dramatic and powerful images of fire which dominate social media, yet simultaneously undermine fire's capacity to communicate blame and links to climate change. This tension is explored throughout the article with fire analysed as a unique site of contestation in the visual communication of climate change.

INTRODUCTION: LIVING IN THE PYROCENE

In summer 2023, social media feeds show images of megafires on Greek Islands with thousands of people being evacuated (Smith and Chrisafis 2023). This is Greece's biggest evacuation ever, with an estimated 19,000 people being moved from villages and resorts on Rhodes as wildfires raged. Italy's biggest island, Sicily,

was in the same situation, with wildfires sweeping across the land including around the main cities of Palermo, Catania and Messina. Meanwhile, Canadian wildfires blanketed northern US cities with air pollution and the deadliest wildfires the USA has seen in more than a century destroying the town of Lahaina on the Hawaiian island of Maui which resulted in hundreds of deaths.

These are all manifestations of what Pyne (2022) calls the Pyrocene which is 'a fire-centric perspective on how humans continue to shape the Earth'. This concept redefines the Anthropocene focusing on the long alliance between fire and humans. Yet, it illustrates that when people started burning fossil fuel, this historical connection fell apart because of humanity's unrestricted firepower. As we are witnessing a proliferation of images on traditional and social media used to build narratives about the future of our planet, it is crucial to understand how visual discourse addresses the Pyrocene and wildfires, exploring how both public and environmental advocates have engaged in presenting alternative views and solutions to this urgent issue. In this context, visual images have the capacity to arouse emotions, making them an effective medium for the social construction of risk and danger messages (Joffe 2008). In this article, we explore how fire is deployed to communicate the risk and dangers presented by climate change. It does this through the examination of a novel and under-researched topic, i.e. wildfires, and explores the relationship between climate change communication and visual imagery on social media.

Using the case study of the California wildfires of 2020–2021, we examine how the symbol of fire is harnessed as an aesthetic resource to communicate the urgency of climate change and its impact. We understand fire not

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as normatively ‘good’ or ‘bad’, but as an aesthetic resource which shapes meanings and understandings, and we address visual discourse as a space where ‘the images are the argument’ and in which specific agencies are afforded to the image itself (Traue, Blanc, and Cambre 2019, 327). In this respect, we understand ‘aesthetics are more than Kantian interpretations of what is beautiful or pleasing to the eye but comprise a range of *performances*’ (McGarry et al. 2019, 17; emphasis in original). Whilst aesthetics is typically understood as ascribing value or beauty, we argue that here that aesthetics serve a communicative and expressive function and are bound up with the visual framing of phenomena to create meaning, knowledge, and understanding. This article asks: What is the visual discourse on fires on social media during extreme weather events and phenomena such as large-scale wildfires? How is this harnessed by environmental activists to shape narratives and meanings regarding climate change? We demonstrate that fire becomes synonymous with specific ideas and imaginaries (i.e. danger, fear, risk) and has the capacity to transform meanings and shape narratives vis-à-vis climate change, especially regarding causality and blame.

The article contributes to two strands of literature. First, it advances our understanding of the repertoires of civil society organisations (Doerr, Mattoni, and Teune 2013) by showing how environmental activists attempt to shape narratives and understandings of climate change through visual communication using fire as an aesthetic resource. A tension arises on the visceral power of images of fire which communicate danger and risk, warning populations to take heed, yet environmental activists attempt to harness fire as a tool to communicate causality and apportion blame. While research on civil society and social movements has tended to privilege text over visual images (McGarry et al. 2019), this research illuminates the role of visual discourse in shaping meanings (Rose 2016). Secondly, the article engages with the relatively under-researched topic of climate crisis communication on social media (Hopke and Hestres 2018; Wang et al. 2018) by demonstrating how images of fires struggle to capture the nuances of climate change. Fire is deployed by diverse actors to infuse emotions, communicate risk, and ascribe blame. As an aesthetic resource it struggles to communicate the nuances of climate change and the complexity of the climate crisis. A surprising tension arises in climate change communication with fire obscuring the link between extreme weather events such as wildfires and climate change. This article shows that the visual power of images to ‘bear witness’ or act as evidence is

blunted by the use of fire as an aesthetic resource by environmental NGOs.

The article starts by providing a review of the literature on risk and fire in visual climate change communication. Then, we illustrate our methodology and introduce our case study. In the findings section, we explore two visual discourses derived from our datasets. We show that the more general visual discourse specifically evokes the impact, risk, and devastation of wildfires, while in the second one civil society deploys fire as an aesthetic resource of danger but also make an explicit connection between wildfires and climate change and fossil fuel reliance. In the analysis section, we connect the main themes that emerged from our research to the academic debate highlighting the ambivalences in the visual treatment of wildfires. We conclude with remarks on the use of fire as an aesthetic resource in online visual communication.

RISK AND FIRE IN VISUAL CLIMATE CHANGE COMMUNICATION

Fire is hazardous, powerful, and devastating. It destroys landscapes, flora and fauna, as well as human lives, homes, buildings and businesses. Those areas which are more at risk of wildfires (forest fires and bush fires) invest significant resources in land management infrastructure to better control and prevent from the potential danger wrought by fire. Equally, fire is seen as a natural occurrence needed to generate new growth contributing to the vitality of complex ecosystems. Climate change communication uses ‘risk’ and ‘danger’ to frame narratives and meanings regarding climate change to encourage states, industry, international organisations and citizens to shift attitudes and agitate for urgent collective action to mitigate its effects. Visual images are ‘used to represent the climate change threat as real and no longer potential and future orientated’ (Smith and Joffe 2009, 658).

One notable example of the use of risk in climate change communication has been the ‘burning embers’ graph (see Figure 1) introduced by the world’s leading authority on climate change, the International Panel on Climate Change (IPCC), in 2001 to help communicate judgements about risks in line with the ‘reasons for concern’ framework. The reasons for concern are visualised as embers where risk levels are expressed and uncertainties about changes conveyed through graded colour transitions. Initially, this visual culture intervention was perceived as too alarmist, subjective, and unclear with four large oil producing countries

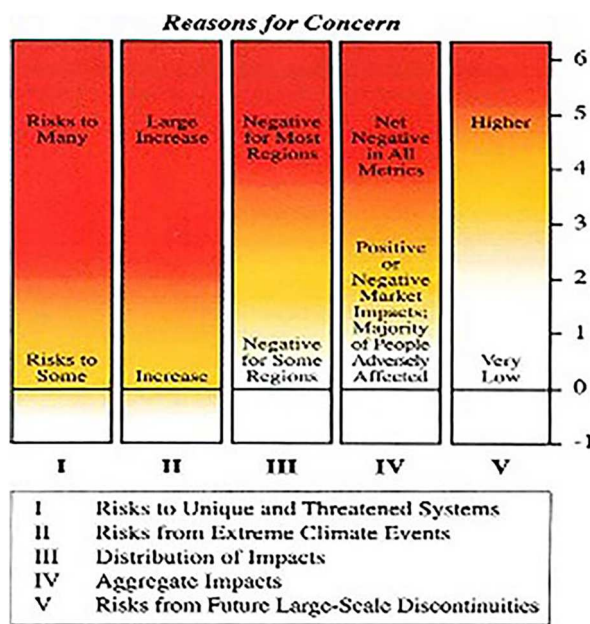


FIGURE 1. 'Burning Embers' IPCC (2001).

(USA, China, Russia, and Saudi Arabia) resisting its inclusion in the 2007 report (Revkin 2009). This graph has since been updated to include more complex scientific data, but the use of embers continues to shape the communication strategy of the IPCC, one that emphasises risk and danger (see IPCC 2021, 2023).

Fire can thus be considered a 'material and symbolic force' which has become 'the dramatic face of planetary warming' (Chance 2022, 179). Images of fire are attention grabbing and contribute to the role of visual images as 'bearing witness' for others to see (Doyle 2007). Unlike other manifestations of climate change such as rising temperatures and CO₂ emissions, wildfires are visible and require human intervention to extinguish, mitigate their impact or prevent them from occurring. At the same time, there is the potential that subtleties of climate change are lost by drawing on fire as an aesthetic resource in climate change communication. For instance, in her case study of urban fires in Cape Town, Chance (2022, 133) suggests that fear of fire contributes to a sense of 'eco-anxiety' which is used to amass political and economic capital, instead of effecting change. Assumptions regarding fire are deployed to infuse emotions such as fear and risk to mobilise public concern. Similarly, recent research on wildfires in California has shown how the metaphor of 'monster wildfires' were used in television coverage to convey threat, risk, and danger (Matlock, Coe, and Westerling 2017).

Hence, fire is an aesthetic resource. In this context, civil society actors make aesthetic choices when capturing and communicating ideas and these are bound up with

the visual framing of collective action (Veneti 2017). Aesthetics can act as a resource for further mobilisation (Doerr, Mattoni, and Teune 2013), but only through the staging and communication of visual imagery and symbols. Environmental activists contribute their cultural imaginaries and worldviews to raise awareness, shape narratives and understanding vis-à-vis climate change. Greta Thunberg's famous plea to the United Nations that 'our house is on fire' (2019) is one notable recent example.

So far, research has privileged the examination of people's perceptions of visual imagery (Ballantyne, Wibeck, and Neset 2016; Beckham Hooff, Botetzagias, and Kizos 2017) and devoted attention to the mainstream media coverage of climate change, concentrating on images on newspapers (DiFrancesco and Young 2011; Smith and Joffe 2013; Wozniak 2021) and television (León and Erviti 2015). Yet, in the last decade it has become clear that much of the framing of the climate crisis takes place within digital environments (Wang et al. 2018) and social media platforms like Twitter/X (Hopke and Hestres 2018) and YouTube (Shapiro and Park 2015). Research on Twitter/X and California wildfires show a link between public understanding of extreme weather events and climate change: from 2017-2-21, during wildfire events, tweets that attributed the increased frequency and intensity of wildfires to climate change were common (Ko et al. 2024). Scholars have also examined how negative emotions such as fear and anger motivate us to be on high alert and seek more information about a particular issue. For example, Smith and Leiserowitz (2012) found that negative affect and imagery towards climate change were the strongest predictors of risk perception. However, intense negative emotions can have a counterproductive effect on risk protection behaviour, with fear and anxiety leading to avoidant behaviours and denial. Indeed, coverage of extreme weather events in the media can create negative affect leading to disengagement with the issue of climate change (Nerlich and Jaspal 2014). Thus, engaging in 'doom mongering' or presenting worst case scenarios can also backfire (O'Neill and Nicholson-Cole 2009).

The environmental movement has relied on negative affect such as fear to raise awareness of impending climate disaster (Cassegård and Thörn 2018). Yet research has also shown that positive affect such as hope, compassion and love can be just as persuasive in raising awareness (Ojala 2012). On one side, environmental advocates communicate their messages through visual frames such as apocalypse, devastation, and danger, whilst on the other side they point to mitigation and adaptive solutions such as collective responsibility and

intergenerational justice. Given the increase in the frequency and scale of wildfires in diverse landscapes from Australia (Sharples et al. 2016) to North America (Milman et al. 2023) and Europe (Cardil, Eastaugh, and Molina 2015; Castelló and Montagut 2019; Dimitrakopoulos et al. 2011), it is key to consider how discourse on wildfires attempts to shape narratives of climate change, its various threats, impact and potential solutions.

Science makes an explicit link between the occurrence of wildfires and extreme temperature and droughts (IPCC 2023), but this causal relationship is not always present in news media and social media debates. More worryingly, scientists have warned that wildfires are a serious issue which are likely to increase in intensity and frequency in years to come: the Canadian Climate Centre GCM scenarios suggest an increase in fire occurrence of 75% by the end of the century (Wotton, Nock, and Flannigan 2010).

METHODOLOGY AND CASE STUDY

Case Study: California Wildfires 2020 and 2021

California's Department of Forestry and Fire Protection (CalFire) confirm that 2020 was a record-breaking year in terms of fires. Five of the six largest wildfires ever in the state occurred in this calendar year, killing 33 people, burning 4.3 million acres and destroying over 10,000 buildings. The 2021 wildfires were destructive but not on the same scale resulting in the deaths of 3 people and destroying 2.6 million acres of land. The fires destroyed natural ecosystems as well as flora and fauna on a scale not yet fully understood; it devastated the state's iconic Redwood and Sequoia trees and one million Joshua trees (Anguiano 2020). California's Governor, Gavin Newsom, regularly declared a 'state of emergency' in pockets of California to focus resources towards areas particularly affected by the wildfires.

During 2020 and 2021 in the US, social media and news coverage were dominated by wildfires. Many Californians saw the effects of the fire even though their livelihoods were not directly in danger since smoke travelled hundreds of kilometres across the state and beyond, affecting the air quality or impeding safe travel. The impact of the fires and ways that individuals could better protect themselves and their houses were frequently the main topics of media stories. Politicians and the media both hastened to identify 'natural' and 'unnatural' reasons. The fact that the state is becoming hotter due to the climate crisis is widely acknowledged. A record-breaking drought and unheard-of heatwaves in

2020 increased the fire risk throughout the American West. Higher heat not only dries landscapes more quickly, leaving them more vulnerable to burning, but it also melts snow faster, decreasing the amount of water flowing into rivers and reservoirs. The role of human involvement and resource use in local and state-level forest management, together with climate and meteorological elements, is important for communities to be better prepared for and knowledgeable about wildfires. Since there is relatively little that can be done to put out a wildfire once it starts, prevention is key.

Methodology

The data collection and analysis combine digital data collection techniques with qualitative data analysis including visual coding and analysis. Social media scraping is a technique for the automated capture of online data that enables a form of 'live' social research (Marres and Weltevrede 2013) using a variety of tools such as hashtags and key word searches on Twitter/X, and trending topics. In this research, scraping produced visual data (including photographs, GIFs, maps, video stills, and memes) from Twitter/X which was initially collected using the Twitter/X API and Mecodify software. Please note that the data was collected before Twitter/X began charging for its free API in February 2023. There are two data sets totalling 350 images: first, visual discourse of the California wildfires on Twitter/X during the two-year period (250 images); second, the visual data of environmental NGOs (100 images). The choice of these two samples is grounded in the need to compare and evaluate the attributes of a broader visual discourse with a more specific one mobilised by civil society actors. For the first data set, Mecodify software was used to collect tweets of the 2020 and 2021 California wildfires using a hashtag search (*#californiawildfire*). We explored other hashtags including *#CAwx*, *#calfire* and *#climatecrisis* but focused on *#californiawildfire* as it was used consistently across 2020 and 2021 meaning it captured data on a range of wildfires. The timeframe of the data collection was 01/01/2020–31/12/2021 which covered the largest wildfires in California's history (especially in 2020). Mecodify was used to extract those tweets which had images and were not retweets leaving 288 unique images. A random sample of these produced the first dataset (250 unique images). It should be noted that sometimes images captured wildfires in other parts of the country (such as the Pacific coast, in Oregon) or in other countries (such as Canada, which also experienced wildfires), but using the text in the tweet we could determine that these are small in number ($n = 4$). The second data set drew on any environmental NGOs which were sub-tweeted or

mentioned in tweets of the first data set. It used Google searches and snowball sampling to identify prominent environmental NGOs in California and the USA, including national organisations with California-based chapters, as well as globally. The Twitter/X feeds for 20 environmental NGOs were scanned to ensure they tweeted about and during the California wildfires in 2020 and 2021, before 11 NGOs which tweeted about the wildfires with an image were selected for social media scraping. These are: Greenpeace USA; Sierra Club; Mighty Earth; Green Action for Health; Just Seeds; Movement Generation; 350.org; Sunrise Movement LA; Climate Youth versus Apocalypse; Earth First; and One Earth. The timeframe of the data collection was the same as the hashtag search. Mecomify was used to extract those tweets which had images related to the wildfires (we did not collect tweets on other activities of these organisations such as intersectional justice or the green new deal) which was understandably much smaller than the first dataset. A random sample of these produced the second dataset (100 unique images). The images comprise photos, memes, video stills, images with text, graphic art, cartoons, visual data (graphs, charts, etc.) and documentary images.

The two data sets were then separately imported and stored in NVivo for coding using a key visual discourse analysis to explore meanings constructed by images (Rose 2016). It is important to note that images are extremely rich sources of data and are highly mutable which is why coding is vital to categorise, organise and make sense of the data (Rose 2016). Codes help to identify key themes and patterns in the content of the visual data. The authors worked together on the codes for the first 50 images in the first data set and 20 images in the second data set. We coded the rest of the images separately but to ensure consistency, 5 images in each data set were coded by both authors. Coding helps to develop a typology of visual framing deployed by environmental NGOs to shape narratives and understandings relating to the wildfires as well as to climate change. Each image has 5–14 codes attributed covering object, actors, iconography, role of voice (framing/demands), affect, and use of text. Codes of both data sets are presented in Tables 1 and 2 below, with each one represented as a percentage allowing for comparison. We followed up with two interviews with communications directors/leaders from two NGOs in the second data set, Greenpeace and Movement Generation, to better contextualise the visual and digital strategies of the organisations we analysed. The interviews focused on the choices made by NGOs in their visual communication strategies and the challenges of how visual framing is deployed on social media. It

TABLE 1. Code of visual data 1 (Twitter/X Discourse from #californiawildfire).

Object	Cartoon/Drawing	2	
	Graphic (not map)	14	
	Map	13	
	Meme	4	
	Newspaper	7	
	Other social media	3	
	Painting	0.4	
	Photograph	68	
	Split screen	4	
	Video still	2	
Actor	Activists	0.4	
	Corporations (not oil)	1	
	Firefighters	24	
	Media	2	
	Oil/Coal Industry	0	
	Police	0.4	
	Public	0.4	
	Politicians	0.4	
	Workers (agricultural)	1	
Iconography	Animal	4	
	Fire	42	
	Forest/Trees	46	
	Home	19	
	Lightning	0.4	
	Smoke in the air/sky	48	
	Affect	Apocalyptic	12
		Beauty	5
		Courage	13
Danger		39	
Death		2	
Destruction		27	
Gratitude		3	
Hope		3	
Hopelessness		2	
Humour		2	
Sadness		2	
Voice		Accountability	1
		Advocacy	0.4
	Air Quality	22	
	Appeal	12	
	Blame	2	
	Community/Solidarity	20	
	Crisis	12	
	Hypocrisy	0	
	Intergen justice	0.4	
	Link climate change	0.4	
	Responsibility	8	
Risk	38		
Urgency	17		
Info sharing		30	
Text	No text	61	
	Text included	39	

should be noted that we do not conflate social movements and NGO; NGOs are part of civil society and constitute an organised part of social movements but are not themselves social movements (see Lang 2014).

VISUAL DISCOURSE 1: IMPACT, RISK, DEVASTATION

In the first data set (see [TABLE 1](#)), those images shared on #californiawildfire, visual discourse tends to focus on the wildfires' impact. Specifically, it examines how the wildfires affect people's home, everyday lives, businesses, mobility, health, and firefighters. Fire appears in 42% of the images shared on Twitter/X making it one of the dominant icons of visual culture during the wildfires, narrowly edged by smoke in the air/sky (48%) and forest/trees (46%). Across the first data set we see visual discourse constructing and communicating danger (39%), risk (38%) and destruction (27%). Overall, visual discourse shared by Twitter/X users highlights the dangers and risks associated with wildfires in a way to warn others (perhaps living close by as well as far away) the lived reality on the ground for residents of California. This section will identify and discuss some of the key themes emerging from the visual discourse.

In [Figure 2](#), the image foreground shows a small community of eight or nine houses. In the background, a huge fire engulfs a mountainous landscape with a river of fire snaking across the frame. The fire appears like lava flowing down the mountainside with smoke from the fire pluming into the air making it difficult to see the landscape. The fire is encroaching on the houses which are in immediate danger. We do not see what is in front of the houses but it is clear that the only escape is away from the fires and the mountain. This image communicates a very real threat from the fires. These well-kept houses suggest they are usually inhabited since some still have their lights on and yet it is unclear whether people are still in the houses or if they had to evacuate in haste leaving lights on. The image shows that people's homes are precarious and in danger; these homes would have recently been considered safe, but the fires have undermined that assumption thus reinforcing the sheer power and unpredictability of the fires. Wildfires are unsentimental and uncaring, just an elemental force which requires fuel to survive and must spread or die out. Through this photograph, we observe the fire in real time and understand its immediacy and urgency.

[Figure 3](#) shows the devastation caused by wildfire which acts as a warning to those about its power. This image is a photograph, the most dominant object in the data set (68%) which serves to 'bear witness' and show viewers the impact of the fires on homes, business and vehicles. Cars are strong and sturdy to protect vulnerable humans within. However, here they are reduced to charred hunks of metal, no longer fit for purpose. The image shows fires still smouldering in the mid-ground as if it is still not

satisfied even though it has destroyed several buildings and cars. A brick chimney is the only man-made structure which remains intact whilst the rest of the structure, presumably made of wood, is gone. This image communicates the intensity of the fires and serves to warn viewers not to be complacent. It is bound up with affective intent which tends to centre on threat, urgency and harm. Images can also act as metonyms, exemplifying particular events or issues (Domke, Perlmutter, and Spratt 2002). Here a dystopian image is presented which looks like a scene from a disaster movie or TV show. It suggests a bleak future of devastation for humanity if we do not take climate change seriously and take preventative action to mitigate its effects. The photograph acts as testimony to what has happened in real time and real life which we can verify with our own eyes as to the immediate devastation of the wildfires and the potential destruction of our planet if we chose not to act. No humans are presented in this image which reinforces the dystopian scene, just a desolate immediate future where the consequences of our actions and policies conspire to materialise our worst fears.

Images which show apocalyptic scenes are popular on social media (12%) as they have the potential to grab our attention, generating shock and awe. Photographs, such as [Figure 4](#), do not, at first glance, seem real; it looks like something from a movie or TV show generated by CGI. This image is stark in its representation and the aesthetic illustration of fire. The background dominates the frame of the photograph with the foreground silhouette of a firefighter (we can tell by the outfit and helmet) dwarfed by the fires raging far into the distance. We witness an entire landscape engulfed in flames with trees on fire on the left and right of the image. In the background, the crest of the mountain is on fire with smoke bellowing across the image adding a strong orange filter to it, thus reinforcing this apocalyptic vision. The scene does not look real and communicates a powerful fire which is out of control and one where human intervention would be insignificant. The firefighter stands facing the flames on a rock and surveys the landscape. The paltry size of human intervention stands in stark contrast to the scale and sheer ferocity of the fire. Humans are presented as helpless and hopeless, mere observers of the power of nature who can only watch and hope that the fires do not cause too much destruction. Whilst firefighters feature regularly in this data set, at 24% more than any other actor, usually they appear actively fighting and putting out the fires which offers hope and communicates gratitude and courage. In [Figure 4](#), the firefighter is, like us, merely an observer as the fire rages. Human intervention in this case is too little, too late. The composition of this image is somehow reminiscent of the



FIGURE 2. Homes at risk.

famous painting by German Romantic artist Caspar David Friedrich, *Wanderer above the Sea of Fog* (1818) that portrays a man proudly (and defiantly) contemplating a stormy landscape from a cliff. Whereas this painting, in line with the spirit of the Romantic age, evokes the ideal of the sublime and a world of potentially infinite adventures for those who are brave enough to wander, [Figure 4](#) stands as a stark reminder of our finitude and inadequacy to face the devastating power of Mother Nature.

Whilst photographs dominate the visual discourse on Twitter/X, it is important to consider how other objects are deployed on social media and what this tells us about the symbol of fire. Maps (13%) are useful objects and graphical representations are popular in science and health communication as a means to share information and knowledge in a supposedly objective manner. In [Figure 5](#), a map of mainland USA is overlaid with wildfire incidents. Clearly these fires are prevalent on the west side of the USA but are



FIGURE 3. Cars on fire.



FIGURE 4. Firefighter facing huge forest fire.

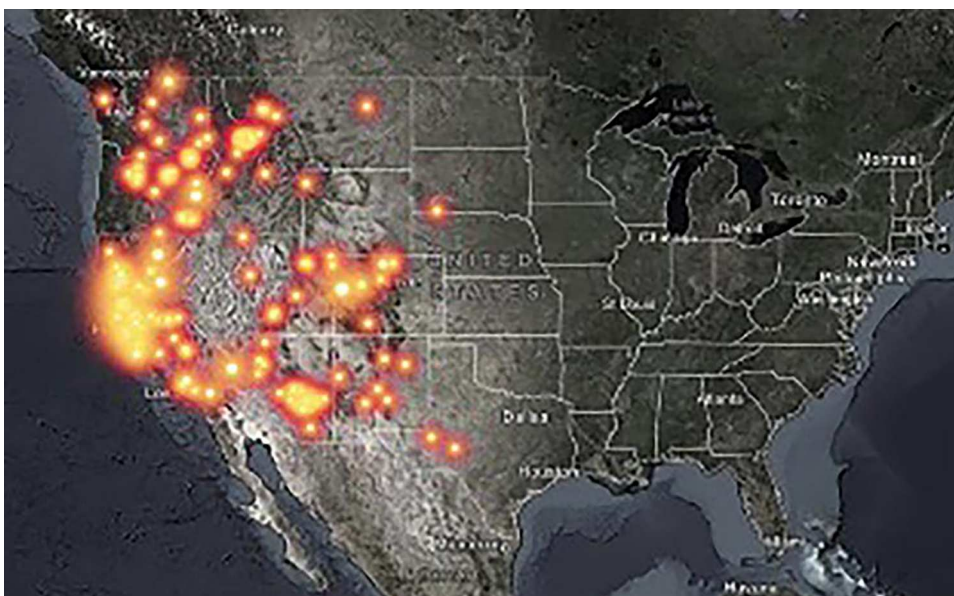


FIGURE 5. Map of USA with burning embers.

concentrated in California. Some text appears in this image to identify various cities with only the 'Los' in Los Angeles still in view, the rest being obscured by the red, orange and white clusters which almost completely block out the state of California. This map suggests that California is engulfed in flames from the north to the south. Here, the symbol of fire is used to communicate fear and danger. Whilst in most graphical and maps, flames are used to communicate the presence of fires, here burning embers are deployed to show where the wildfires are. They show the scale of the wildfires including the fact that they are not just in California where much mainstream news media focused on. Whilst previous images document the power and impact of the wildfires through dramatic imagery, [Figure 5](#) places the fires in an abstract graphic context which show its scale and reach, reinforcing the view that those on the west coast, and especially in populous California, are both susceptible to wildfire and vulnerable due to geographic proximity.

Visual Discourse 2: Danger, Responsibility, Action

The visual communication strategies of environmental NGOs (see [TABLE 2](#)) differ from the visual discourse of Twitter/X users. Like the first data set, photographs dominate (70%) though NGOs attempt to identify and target those considered to blame for the wildfires, notably politicians (20%) and oil/coal industry (22%). Environmental NGO visual discourse also differs from the first data set in that it focuses on solution such as taking collective action and engaging in activism (19%). NGOs attempt to use fire as an aesthetic resource to shape meanings, share knowledge and ideas and raise awareness. Fire appears in 28% of images (less than the 42% of the first data set) meaning it is not as prominent in the visual communication of environmental activists. This data set focuses on affect such as anger (23%), hypocrisy (10%), fear (6%) and blame (39%). NGOs use visual images to link the causes of the wildfires to climate change and to attribute blame to those who are deemed responsible. At the same time, apocalypse (18%) and danger (17%) emerge as key themes and help reveal how fire is deployed by activists to frame their arguments and ideas, and how they attempt to shape narratives of the wildfires.

Gavin Newsom, the governor of California, admitted that 'climate crisis is real' in 2021 (Office of Gavin Newsom 2021), yet has taken limited action to stop California's reliance on fossil fuel. Memes, which account for 14% of all images and are a popular way to

TABLE 2. Coding of visual data 2 (Environmental NGOs).

Object	Graphic (not map)	24	
	Map	4	
	Meme	14	
	Other media	4	
	Photograph	70	
	Split screen	8	
	Video still	1	
Actor	Activist	19	
	Firefighter	2	
	Indigenous	3	
	Oil/Coal Industry	22	
	Politician	20	
	Public	11	
	Workers (agri)	8	
Iconography	Animal	5	
	Fire	28	
	Forest/Trees	29	
	Home	14	
	Landscape	11	
	Oil drill/pump	4	
	Rainforest	8	
	Smoke in air/sky	30	
	Smokestacks	2	
	Affect	Anger	23
		Apocalyptic	18
Beauty		11	
Danger		17	
Death		2	
Distain		9	
Fear		6	
Hope		2	
Humour		11	
Love		1	
Voice		Advocacy	24
	Blame	39	
	Community/Solidarity	25	
	Hypocrisy	10	
Text	Link climate change	25	
	No text	40	
	Text included	60	

utilise humour to make an argument or demand, frequently draw attention to this apparent double standard. For instance, in [Figure 6](#), a common meme depicts a cartoon dog saying, 'This is fine' while drinking coffee in a burning house. The meme is a metaphor for being unaware of one's surroundings or unconcerned with what is happening in the immediate vicinity and has been adapted to various settings. In this instance, Gavin Newsom proposes, 'Let's keep fracking', even though the home (i.e. California) is obviously on fire. It implies that Newsom is continuing a policy of supporting fracking in the state while being either unaware of or purposefully disregarding the fact that the home is on fire. The hypocrisy and double standards displayed by policymakers in their acts, which increase the frequency of wildfire occurrences, are highlighted



FIGURE 6. Newsom 'Let's keep fracking' meme.

through this visual culture. NGOs and Californians, as they imply, find both justifications inadequate. Even though a meme uses fire to denote danger, the cartoon flames that devour the house are pretty innocuous when compared to images of wildfires.

Exxon, the largest oil and gas company in the USA, is named as a cause of a 'global catastrophe'. Figure 7 shows a raging fire stretched across the background, but the image is dominated by text which communicates several clear messages: Exxon is responsible for fossil fuel production; wildfires are caused by fossil fuel production; and Exxon are culpable for the damage caused by wildfires. Here, destructive wildfire is represented as the ultimate effect of oil/gas production. The fire devastates forests/woods (rather than homes), showing that NGOs focus impact on the natural environment rather than human environments and structures. It is text which does the explicit work of

linking climate change to oil industry and the impact, wildfires, since without text this message would not be so clear. Here, fire represents the impact and the effect to the fossil fuel industry's cause.

A similar argument is made in Figure 8. Many images do not rely on text and communicate a clear connection between industry and wildfires (Figure 8). In this split screen image, the orange smoke plumes upwards to create or feed a forest fire. The orange flames in the top screen burn brightly amongst verdant trees which will not last long due to the engulfing flames. The argument is that man-made industry is fuelling the fires, and we humans, are to blame. The aesthetic choices made by diverse actors such as NGOs reveal the pivotal role of visual culture in shaping understandings and ascribing meaning to the unfolding climate crisis. It voices concern at our reliance on fossil fuels and points the finger of blame at industry as well as the politicians who



FIGURE 7. Exxon targeted by Greenpeace.



FIGURE 8. Split screen of cause and effect.

do not advocate for greener energy sources. The split screen is a visual communication which shows 'before and after' (Smith and Joffe 2009) with an image capturing change and/of effect realised visually as evidence, a popular visual tactic in climate change communication where the causes and effects are not always so immediately visible.

Figure 9 is a night-time photograph taken by a freelance photographer who works for Greenpeace. During the wildfires, many parts of the state were inaccessible, the fires rendered transport difficult, causing traffic to stop due to the fires themselves and the resulting smoke and fumes. The inability to freely travel across the state is one of the impacts of the wildfires as this disrupts resident's

everyday routine. This image captures cars which have had to stop due to the fires and smoke in the background. The mountain is covered with fire and appears like lava flowing down the mountainside, stretching across the landscape. The mountain looms large in the background suggesting an impenetrable and immovable object. This dark and ominous scene demonstrates the extent of the disruption caused by the wildfires, that even vehicles on paved roads and highways will not be able to pass. The obvious cause is being placed on the car manufacturing industry which are reliant on gas/petrol, the irony being that car use is exacerbating climate change and cars themselves are left ineffective in the face of the wildfires.



FIGURE 9. Apocalyptic scene of a landscape on fire.

DISCUSSION AND CONCLUSION: STRENGTHS AND CHALLENGES OF WILDFIRES IN VISUAL CLIMATE CHANGE COMMUNICATION

Fire constitutes both a medium and a message and wildfires alert us to the very real dangers of climate change. In this article, we explored how fire as an aesthetic resource is deployed to communicate the risk and dangers of climate change. Fire presents several challenges for climate change communication including how we engage in wildfire discourse, shape understandings and knowledge and ascribe meaning to significant media events like wildfires. We have seen that fire presents opportunities for environmental actors to generate attention, raise awareness and shape narratives of the climate crisis and future imaginaries of our planet. Yet, surprisingly, it can limit our vision and focuses attention on impact rather than the link between climate change and (more frequent) manifestations of wildfires. This finding echoes research on other extreme weather events; Nerlich and Jaspal (2023) show that social representations of recent floods in Germany are similarly bound up with communicating helplessness, insecurity, and mistrust of formal political processes. As such, fire can be quite blunt as a communication tool perhaps obscuring more subtle and nuanced understandings regarding causality, blame, responsibility and potential mitigative or adaptative actions.

Wildfires lend themselves to powerful, dramatic imagery which grabs our attention. Fire as an aesthetic resource communicates danger and urgency. Images shared on Twitter/X do not tend to be mundane but those which

have the potential to engender a sense of fear, risk and danger. Images help to communicate storied, lived realities and connect seemingly disparate issues like climate change and wildfires. They provide a sense of authenticity and validity to wildfires as they capture events on the ground and show their devastation. As images of wildfires are shared on social media, users ‘witness’ the potential devastating power of nature. These images are often alarming and demand our attention, with the potential to galvanise others to act; they confront us with the precarity of our existence in the face of nature’s power and remind us of our relationship to the planet and our complicity in its demise. Obviously, it is almost impossible to discuss wildfires without also showing the power and destruction brought by them, meaning that wildfire is part of our language and carries powerful semiotic lucidity. According to our interviewee Katie Nelsen, communications director at Greenpeace USA:

‘the best images can be taken by people who are experiencing that moment in real time so the firefighters at work or wrap ups on different news outlets or on Twitter/X or Instagram is important as viewers can see the real-world impact of what is happening. These things stay abstract when you can’t show what has happened to someone’s home or a state park. Images help to draw people into the conversation or to develop or create empathy’.

It is hardly surprising that dominant visual discourse of the wildfires tends to play up this dangerous aspect of

fire's shared understanding and meaning. Duan, Takahashi, and Zwickle (2021) demonstrate that visual culture practices cannot directly lead to increased levels of concern or behavioural intentions. But at a minimum, these images grab our attention and act as a warning. A note of caution is required though as Wang et al. (2018) show that emotional responses and visual attention do not necessarily predict changes in attitude or knowledge, therefore we cannot assume a causal link between images of wildfires and substantive transformations in behaviour. These images suggest risk to homes, lives, businesses, ecosystems and attempt to raise awareness of the immediate danger that communities face due to fire as well as to the resulting smoke and poor air quality. Yet what is relatively absent from visual discourse in the first data set is any discussion on links to climate change and the specific conditions (drought and heatwaves) which create the kindling for wildfires to start and spread. The complexity of climate change can get lost amidst dramatic images of this media spectacle which demonstrate the raw power of nature and our relative helplessness in managing the fires.

For their part, environmental activists deploy diverse aesthetic tactics to educate, reorient visibility for audiences and connect visibility to action, strengthen solidarity and expanding agency (Balkin 2021, 238). Through our data, we show that environmental NGOs focus on who is to blame and which actors are responsible for mitigation and adaptive efforts thus adding more complexity to the underlying causes of wildfires by framing human intervention as inadequate and demonstrating that mitigation is the best hope we have. Part of this strategy draws on scientific facts but also local knowledge from indigenous communities in California and Arizona. As Tré Vasquez from Movement Generation points out during the interview:

'we don't sugar coat the fact that we are experiencing ecological crisis. Our communities are going to inevitably be on the front lines of this collapse that we're experiencing. And what we always say is that like we're not trying to alarm people or be alarmist'.

Boykoff (2011, 169) rather optimistically argued that social media 'offers a platform for people to more democratically shape the public agenda'. The limits of such an assertion are more obvious today: social media has not emerged as a public sphere but rather as a contested battleground of political ideas and ideologies, with significant mis/disinformation and unverified claims. Indeed, social media platforms such as Twitter/X allow different voices to be heard and is an important

resource for environmental activists to articulate demands, raise awareness, engage in information sharing and shape narratives regarding significant climate events such as wildfires. Yet, because environmental problems are not always visible, the visual representation of climate change is more open to interpretation (and potentially to manipulation) (Hansen and Machin 2013), with environmental activists and Twitter/X users willing to use wildfires as a dystopian symbol of what fate awaits our society as well as our planet. Fire acts as a rhetorical device to communicate danger but also to present a vision of the future of our planet which is hazardous, uninhabitable, and undesirable. The apocalyptic images presented on social media are supposed to shock us and help us to realise that our planet is vulnerable unless we, through collective action, do something about it.

Our research shows that civil society organisations use fire as an aesthetic resource to make an explicit connection between wildfires and climate change and accelerators such as fossil fuel reliance. Civil society actors work to ensure that wildfire aesthetics communicate an explicit relationship between climate change and wildfires, one which is conspicuously missing from the general visual discourse of Twitter/X users. There is an intention behind what environmental NGOs communicate as their role is to ascribe meaning and establish narratives to serve their objectives, namely, to make people care more about the planet and to change societal and state behaviour vis-à-vis climate change. The message they convey is that climate change is real and present today and not just a problem for future generations which can be ignored. At the same time, they spread a narrative of a dystopian future that awaits us if we do not take mitigative action today, but also provide a glimpse of hope and point to urgent actions and alternative imaginaries beyond the dominant apocalyptic visions.

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