

ELEMENTS: Season 2, Episode 1: Humans are drawn to fire, for better or worse

BETH MASKALL This episode was recorded on Whadjuk Noongar Boodja. Hi, I'm Beth, and you're listening to Elements.

Elements theme song; upbeat and inquisitive

BM Water, fire, earth and air. Each season of Elements is about one of the four classical elements, and how they shape the world around us. This season: five episodes, from five producers, about fire. We'll hear stories from all corners of Western Australia, covering everything from festival bonfires to devastating wildfires, from echoes of ancient knowledge to the technological possibilities of the future.

When Ancient Greek thinkers were pondering what makes up the world around us, a philosopher called [Empedocles proposed water, fire, earth and air](#) as the things that make up everything else, and that can't be broken down into smaller components. These four elements are mentioned in ancient cultures across the globe, from [Greece, to India to China](#). Sometimes there's an additional fifth one, but nobody could agree on what it was. So we're not going to talk about it.

Since the discovery of atoms, we've known that the Greeks were way off the mark. But you can kind of see where they were coming from. The forces of water, fire, earth and air shape our landscape and our lives. In Perth, this coastal city of oceans and drought, bushfires and barbecues, the Freo Doctor that blows in from the west, they're hidden in the interplay between culture, policy, and science. These elements are a part of the stories we tell about ourselves.

Across our vast and diverse sunbaked land, First Nations people have worked with fire to care for, protect and renew country. Here in Perth, Boorloo, in the southwest corner of Australia, we're recording this podcast on the traditional land of the Whadjuk people of the Noongar Nation, and we acknowledge them as the first scientists and storytellers of this land.

So let's take a seat around the campfire with this episode's producer, Madeleine Mitchell, where we'll hear about some people that are drawn to fire, for better or worse.

Please be aware the second half of this episode mentions PTSD and suicide. Take care while listening. [A link to support resources can be found in our show notes.](#)

*SFX: Fire crackling
Mystical, atmospheric music*

**VOX POP
SPEAKER 1**

And it was this huge, kind of, massive structure a couple of stories high, then they just set it on fire...

**VOX POP
SPEAKER 2**

...When you can just hear the crackle of the fire as it sort of starts to burn, and then...

SPEAKER 1

...and then it's kind of really dark and so the only light is coming from this flame. But they're all just fixated on this effigy...

SPEAKER 2

...this massive surprise happened as it burned, where it just started breathing fire. So they'd built some kind of flame thrower inside its mouth and it was just phenomenal...

SPEAKER 1

...It was beautiful, but it was also quite connecting.

Techno music

**VOX POP
SPEAKER 3**

Well, I have heard that it's kind of similar to Burning Man...

**VOX POP
SPEAKER 4**

...It was shrouded in a bit of mystery and it had a certain amount of legend and myth to it...

SPEAKER 3

...It does kind of give you cultish vibes: "It's very free spirited. But I can't tell you exactly what happens, you just have to be there. Otherwise you wouldn't understand."

SPEAKER 2

So I guess I just sort of assumed it would be similar to any other camping festival where just a bunch of people in the desert, i don't know, taking drugs and partying.

SPEAKER 1

And it's probably what you imagine it is when you think about it, or you think of Burning Man.

SFX: Fireball whoosh

**MADELEINE
MITCHELL**

Blazing swan. Founded as an offshoot of Burning Man, the annual festival has seen crowds gathered since 2014, near the WA wheatbelt town of Kulin and on the land of the Nyaki-Nyaki Noongar people. It describes itself [as "an experiment in temporary community and artistic expression."](#) Blazing Swan is powered by attendees who all contribute something to the event, and follow the 11 principles which include communal effort, self expression and consent.

Atmospheric, spiritual music

MM

The week long event culminates in the burning of a giant wooden effigy. This effigy changes in form every year but usually resembles or incorporates the design of a swan. That is, before it is set alight. I previously had little to no knowledge about the festival. I'd heard whispers of intricate wooden sculptures set against the backdrop of a barley field, detailed and

on theme outfits in every color imaginable, and fire dancers whipping ribbons of flame out of thin air. I wanted to find out more, so I spoke with Blazing Swan's fire safety lead, Hana Priest. She told me her fascination with fire was sparked by a little festival known as Burning Man, where she witnessed some fire theater.

SFX: Fire crackling

HANA PRIEST

I remember just looking at it thinking, I want to do that. I want to be that. Whatever that is, whatever I need to do, that's what I want to do. So that there was that very clear moment of inspiration where I just found my "thing." I've basically, you know, pursued that for the last 20 years.

MM

In the blazing Swan community, Hannah is known as the fire queen, quite a fitting title if you see her work. As a performer, Hannah plays with fire in a way that seems wholly unbelievable. Many would say what she does is magic. But it's really a simple and beautiful science.

HP

The reason I love the event is because we do get to do a lot of creative burning, there's a lot of creativity, and it is that combination of science and art. Because if you understand how different fuels work and different fuel loads that you put in the structures, you can really design the burn, which I find really interesting and challenging. Because sometimes the wind is against us and things don't quite go as we would want them to.

Playful percussive music

HP

Because we get to burn these large structures, there's a lot of creative design and input that can go into that. So you could just throw a bunch of diesel onto it and set it on fire. But you can create a sense of ceremony around the burning of a structure, with fire dancers and processions and that kind of a thing. And then there's what I call "burn design", is designing how the structure burns, how it collapses. And that in itself can be art. Because if you start the fire in a certain place, you can plan how it moves through the structure, how it consumes that structure, how that structure falls, and then sometimes in that falling and the structure kind of coming apart, it can reveal things within the structure that are piece of the artwork that you couldn't see before.

MM

Okay, so this all sounds very lovely. But the idea of setting a massive wooden structure on fire in the middle of the bush sounded quite risky. And I couldn't help but wonder how they considered the safety side of things.

HP

One of your main things with fire is its proximity to other things. So if you're say, putting down a burn barrel, you need to have it at least five meters away from the nearest structure. Because the site is windy, we will get ash and embers and things sometimes flying around. So you can't have other burnable things anywhere near it. And whether that's a large burning artwork, whether it's a burn barrel, whether it's a tiki torch, or a fire performer, those safety perimeters are probably the key things to make sure that that fire is in a place where it's safe for it to be. And then having all the fire safety equipment in place so that if the fire does move to where it shouldn't be, we are able to easily put it out, and therefore it doesn't pose a risk to anything.

SFX: Field recording of the Australian bush

HP

We do the site layout so that the fire and the big burning things are well away from the bushland and all that sort of stuff. And wind direction plays a big part into it as well. So we set up the site so that any large burning structures have their ash and embers flying basically into an open field where there's no trees, there's only wheat stubble at most, so that it doesn't pose a risk to the bushland. And if the wind does change, then we just don't burn the structures. So on the days that we burn the large structures like the temple and the effigy, we are watching the wind forecast the whole day. And we only burn if it's safe to burn. And that's why we also consult with our firefighters on site. Because ultimately they'd be the one dealing with any issues that break out. So we consult with them to be like, you know, "are we happy to burn in these conditions? Is this safe?" So safety is obviously the the number one priority, always.

MM

So there are clearly a lot of safety considerations and protocol behind the event, and logistically it sounds very complex. But why go into all this effort to just watch a big fire. I wanted to understand more about why the effigy burning is so important to those who attend.

HP

The reason we still burn a structure and why all the regional events burn a structure, is it creates that sense of people coming together. Because people have for millions of years come together around fire. You know we gather around fires for cooking, for heating, for safety, for just, even community for discussion, you know, you sit around a fire and you talk in the evenings. So it is that sense of drawing people together and having everyone together at the same time in the same place.

Atmospheric drone music

HP

And then it's also just really cool to see something enormous burn. Because normally, if you see something big burning, it's a problem like it's a building that's on fire. So it's not something you can enjoy or celebrate, because it's a bad thing. Whereas there the effigy is this huge structure about 12 meters tall, quite often, about 12 meters or so across, 15 meters, something like that. So it's a size of structure that you never normally get to

see burn. It just looks cool, fire just, it's amazing, because you see the power of the fire. You know, fires are visually beautiful to look at, but then they're also incredibly destructive. And it's interesting to watch that organized planned destruction.

MM

So people are drawn to Blazing Swan because of community and the large controlled burning of the effigy clearly brings enjoyment and inspiration to those who attend. But what happens when you're forced into fires that are out of our control, and possibly dangerous?

In the summer of 2019 2020, Australia experienced one of the worst bushfire seasons in recent history. The shocking images of bush engulfed in a sea of flame, roiling clouds of smoke blocking the sun, people and animals alike sheltering in the ocean from the fires. It's an event we're unlikely to forget anytime soon. So I wanted to know how the Black Summer bushfires impacted those who are fighting to keep them under control.

So I spoke to Wavne Rickers, who was the co-chief investigator of the After the Fires Report released in 2023. The government funded study aimed to investigate the mental health impacts the bushfires had on emergency personnel. The [qualitative report](#) [PDF download] contained firsthand quotes from firefighters who responded to the Black Summer bushfires. Since the report is anonymous, we couldn't get the actual audio. So we've had actors voice some of the quotes.

SFX: Wind gusts

VOICE ACTOR 1

I guess it creeps up on you, you become quite bitter. And I think you end up seeing the negative side of pretty much everything.

VOICE ACTOR 2

Every Monday when I hear the CFS siren, or a plane overhead, I stand there and look up and catch my breath without really realizing I'm doing it. These triggers are clearly just under the surface.

VOICE ACTOR 3

It's not a possibility, but a probability that when you work in disaster response or recovery space, that you will be exposed to a risk of psychological harm. It should be the fabric of the organization to acknowledge that this job may have a lifelong negative impact on your psychological wellbeing.

MM

It's clear to see how deeply these survey participants were affected by the fires. I wondered how far the impact extended beyond these individuals. I asked Wavne why a report was needed.

WAVNE RICKERS

Australia's always had bushfires. And I think we all grow up knowing that and expecting every summer there'll be a lot of fires. We've never seen anything like the Black Summer bushfires. And science is telling us that we have a drying and a warming climate. And that large scale fire events are going to become more and more prevalent. Therefore the impacts of those

large scale events are going to cause ripples in society. Because events like that impact on the people that live in Australia and the people that fight the fires. We know from previous research research that first responders, firefighters in particular, suffer from mental health conditions at twice the rate of the general adult population. So this is a fairly significant impact that we're looking at.

Solemn, contemplative music

MM

A major difference in the response to the Black Summer bushfires and other major disasters is the reliance on volunteer firefighters. It is estimated 82,480 emergency services personnel responded during the 2019/2020 fire season, with volunteers making up 78% of the response.

Australia is not the only country to lean heavily on volunteer firefighters, with countries such as Austria, Germany and China also having a high percentage of volunteers. But Australia's physical land size and propensity to bushfires puts a heavy strain on our own fires. 0.78% of Australia's population are volunteer firefighters. And when we exclude the 71% of the population living in major cities, it amounts to 4.5% of the country's rural population volunteering.

A key driver in volunteering is the importance of protecting your community. And with the need for fires outweighing the number of paid jobs available, if volunteers don't step up, who will? Volunteer fires attend weekly to fortnightly trainings for around three hours. The amount of time spent responding to fires varies. But the [After the Fires Report](#) found that across the Black Summer bushfires, volunteers spent on average around three weeks involved in firefighting. Paid firefighters, employees, spent around a month in total, with many volunteering their time on top of paid work.

WR

What all of them told us was that they were unprepared for what they were going to experience in the Black Summer fires. Lots of people who felt their life was threatened, and that's about 30 to 40% of people, had much higher rates of mental health problems. So while their normal preparations are, "how to put out a fire," and "how to protect houses, how to rescue wildlife, what to do in a burn over", and that's when you're stuck in a vehicle and there's a fire, you're right in the middle of a fire and it burns right over the top of your fire truck. What they found was that the intensity of the fires and the scale, the geographic scale was something that they'd never seen before. So their training left them unprepared. And so people who felt that they were given roles or jobs to do that they were unprepared for had worse mental health outcomes.

MM

With many volunteers going into the service to aid their community, there is a belief that they need to remain strong for their community, regardless of how their mental health is impacted. So how do firefighters get assistance for their mental health? While some support services are offered, there can be a stigma around asking for help.

WR

So what we would say is that mental health literacy training is super important. We know that a lot of people, about half the people that had mental health problems after the Black Summer bushfires, a year later had not received any help for their problems. That's a common thing among first responders that they think they have to be brave and strong. And if they put their hand up and say, "Look, I need help I'm struggling," that will have an impact on how they're perceived by other people. And it may even have an impact on their ability to carry out their roles. If you're a paid firefighter, you'd be worried about losing a job. If you're a volunteer firefighter, I guess you'd just be worried about being seen as weak. So what we would like to encourage people to do is for the agencies to carry out some form of mental health, first aid training or literacy training, so that people understand it's not weak to put your hand up for help. And we know that the earlier that you say "I'm struggling, can I talk about what I saw," or "can I talk about what I experienced," is the best thing going forward.

MM

With extended and harsh fire seasons becoming the new norm, there is increased pressure and urgency to put support structures such as therapy and counseling in place now. The After the Fires report involved multiple surveys over multiple years following the fires, with over 5000 personnel taking part. Let's dive further into the findings.

WR

We found that about 5000 people who responded to the research had high need of mental health support. So by saying that, what I mean is those people suffered from post traumatic stress disorder or PTSD for short, high or very high psychological distress, and suicidality. So we found that the number of people that had mental health problems after the Black Summer bushfires were approximately twice the number that you would expect after a normal summer season. So that goes to show the significant impact that fighting the Black Summer fires had on those people.

MM

And the report found that over time, things weren't improving for the people affected.

WR

So between one year and two years after the fires, more people found their mental health worsened over that period of time. About 5% had improved, about 12% stayed the same and not good, so poor mental health. But three quarters of people, their mental health remained pretty good. So they had good coping mechanisms. And speaking of coping mechanisms, what we did find, there was a strong association between poor mental health outcomes and things like social support. So if you had low levels of social support, you were 30 times more likely to suffer from a mental health condition caused by the Black Summer bushfires. That's a significant finding in and of itself.

We found an association with binge drinking, with loneliness, poor workplace cultures, so high levels of stigma towards mental health. So what that means is that we need to address those things going forward. So people that were able to talk about their experiences, either with their colleagues or with their family and friends, they were the ones that were

more mentally healthy. And I, you know, I can't stress that enough that talking about their problems and being open about them is really important.

MM

Considering the scale of the long lasting impacts that the Black Summer fires had on firefighters, I wondered whether it deterred people from firefighting in the future. Because it really is a lot we're asking from them.

WR

We asked people if they were more or less committed to volunteering after their experiences. And the youngest volunteers were more committed to continue volunteering, which is a very heartening finding. And it bodes well for the future. But what that means is that what we also notice, the longer that you're involved in first responder type activity, the more likely you are to develop a mental health condition.

So while we've got these young, eager volunteers out there, we need to meet that challenge by supporting them in every way that we can. So we know what causes mental health problems, you can't reduce the exposure, because that's the nature of what they do. They're going to be exposed to life threatening events. So we know now that if you're exposed to a life threatening event, or a traumatic event, you are much, much more likely to develop a mental health condition. So if we can provide mental health first aid training to those young volunteers now, it will protect them into the future. And so what I'm really hoping now is that that feedback has been received loud and clear, and so that the volunteers are involved a little bit more directly with the planning and the fire response.

MM

It is an incredible finding that despite the danger, the feeling of risking your life, the negative impacts, young volunteer firefighters feel drawn back to the fire front. It makes me wonder if there's just something about fire. Whether it's a dangerous wildfire, or a celebratory bonfire, we're drawn to it. Our encounters with fire alongside communities of like minded people impact us deeply.

Closing theme: nostalgic electronic music

BM

Thank you to Madeleine, and thank you for listening. We'll be releasing a new episode of Elements every week for the next four weeks, so stay tuned.

Next episode, producer Gianfranco di Giovanni looks at bushfire management in WA and the possibilities of what we could achieve if traditional owners and government can work together.

CREDITS

You can find more WA science content at particle.scitech.org.au.

The transcript and citations for today's episode can be found through a link in the show notes. A reminder our show notes also contain links to a variety of mental health support services.

This episode was hosted by Beth Maskell; produced by Madeleine Mitchell; featuring the voices of Hana Priest, Wavne Rickers; our executive

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