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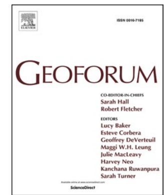

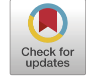

Persuasion without policies: The work of reviving Indigenous peoples' fire management in southern Australia

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ABSTRACT

Catastrophic and unprecedented wildfires have unfolded across fire-prone landscapes globally over the last three years, with highly publicized loss of human life, property destruction and ecological transformation. Indigenous peoples within many nations have persuasively argued that traditional fire management can enhance existing wildfire mitigation strategies. However, there are considerable barriers to the further incorporation of Indigenous practices into existing wildfire policy. This paper explores the potential of Indigenous fire management to achieve broader institutionalization, emphasizing the social labour involved producing and sustaining intercultural collaboration in bureaucratic contexts. Our focus is southern Australia where Indigenous peoples' fire management, often termed 'cultural burning', has been facilitated by an Indigenous-led social movement and growing state support. We draw on interviews conducted with Aboriginal and white land and hazard management practitioners actively engaged in intercultural fire management collaborations largely occurring on public lands. In the absence of institutional clarity, established networks and accreted experience these practitioners work to generate enthusiasm, stabilise Aboriginal peoples' environmental authority and nullify pervasive societal fears surrounding the risk of fire. The case study demonstrates the significance of interpersonal factors in the emergence and maintenance of fraught intercultural collaborations. Despite global optimism, such insights highlight how the revival of Indigenous fire management in nations such as Australia is highly contingent and depends upon routine persuasive labour and fragile intercultural diplomacy.

1. Introduction

Catastrophic and unprecedented wildfires have unfolded across the United States, Canada, Brazil, Russia and Australia over the last three years, with highly publicized loss of human life, property destruction and ecological transformation. In the context of what some climate scientists suggest is a shift towards a state of permanently heightened fire risk, Indigenous peoples within some of these nations have persuasively argued that the traditional management of fire can augment, or even completely replace, existing land management practices (Cagle, 2020; Cabrera, 2020). These optimistic arguments face poorly understood barriers to the wider uptake of Indigenous fire practices within existing government land and hazard management arrangements. The intensely contested nature of wildfire policy and relatively recent prominence of Indigenous fire management means there is little literature that explicitly deals with why and how intercultural fire collaborations succeed or fail. This gap is particularly glaring in the context of Australia's devastating 2019–2020 bushfire season that impacted the nation's heavily populated southeast, and prompted widespread debate over the efficacy of the nation's prescribed burning policies. In the wake of Australia's 'Black Summer', public inquiries have explicitly solicited advice on Indigenous fire knowledge and media coverage has enthusiastically argued for the role of Aboriginal fire management in future land and risk management, also known as 'cultural burning', 'traditional burning' or 'Aboriginal burning' (e.g. McIlroy, 2019; Morrison, 2020). To explore the broader potential of intercultural fire management to achieve widespread institutionalization in Australia and elsewhere, this paper examines the recent revival of Aboriginal fire management across the southern jurisdictions of Australia in the form of dozens of small-scale collaborative projects (Fig. 1).

Australia's Aboriginal and Torres Strait Islander peoples have a long,

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though spatially uneven, history with navigating environmental management structures and institutions generated by British colonization. British colonization, substantively beginning in the late 18th century, has been profoundly disruptive to Indigenous polities and societies. In most places, Indigenous peoples were systematically and violently dispossessed from their ancestral lands and remain largely excluded from colonial land management institutions today. The dominant (though problematic) non-Indigenous narrative about contemporary intercultural resource management is focused on the predominance of Indigenous peoples' land rights in remote and sparsely populated tropical north and central desert sections of Australia. Within the more intensively settled south of the continent – used in this paper to refer to the states of Victoria, South Australia, New South Wales, Tasmania and the Australian Capital Territory (ACT), in addition to southern parts of Queensland, and Western Australia – less expansive land rights and ongoing contestations over Aboriginal peoples' identity makes for a strikingly different field of political negotiation (Weir, 2009; Morgan, 2016) (Fig. 2). Yet, this is where the majority of Indigenous-identifying people live and where there is now significant growth in collaborative fire management, coalescing around a growing support for the incorporation of 'cultural burning' into existing state fire and land management regimes (AFAC, 2016).

Cultural burning can refer to a diverse range of Aboriginal fire practices in Australia, but typically describes the use of small-scale and low intensity fires that produce finely mosaiced landscapes. Though still the subject of debate by some ecological scientists (Enright and Thomas, 2008), proponents of cultural burning argue that Indigenous fire practices can reduce fuel buildup while causing less ecological impact than the higher intensity and large-scale fuel reduction burns that form the backbone of Australia's bushfire risk mitigation strategy (e.g. Steffensen 2020). Public and government interest in Aboriginal fire use has grown steadily over the past twenty years, and a decentralized and Aboriginal-led social movement surrounding cultural burning has helped support dozens of emergent collaborative efforts between Aboriginal peoples and state land and fire agencies on public lands.

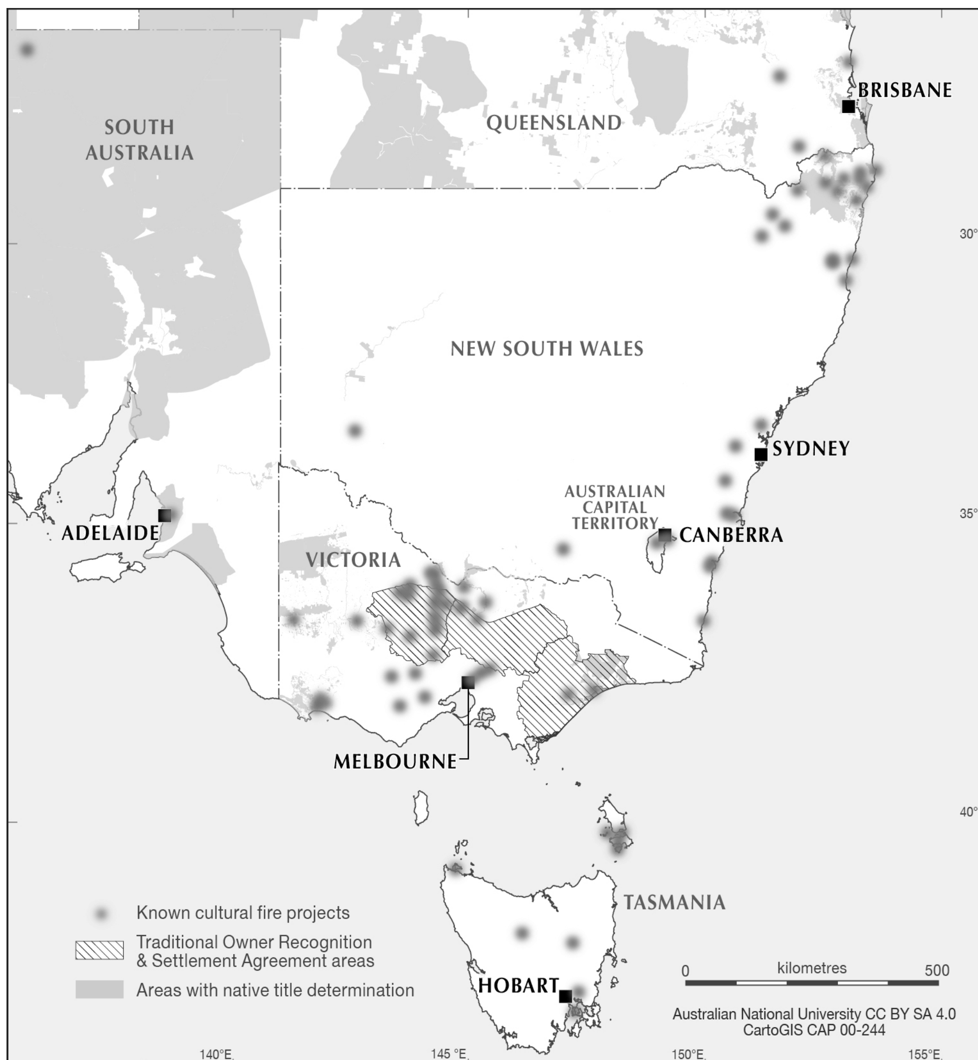
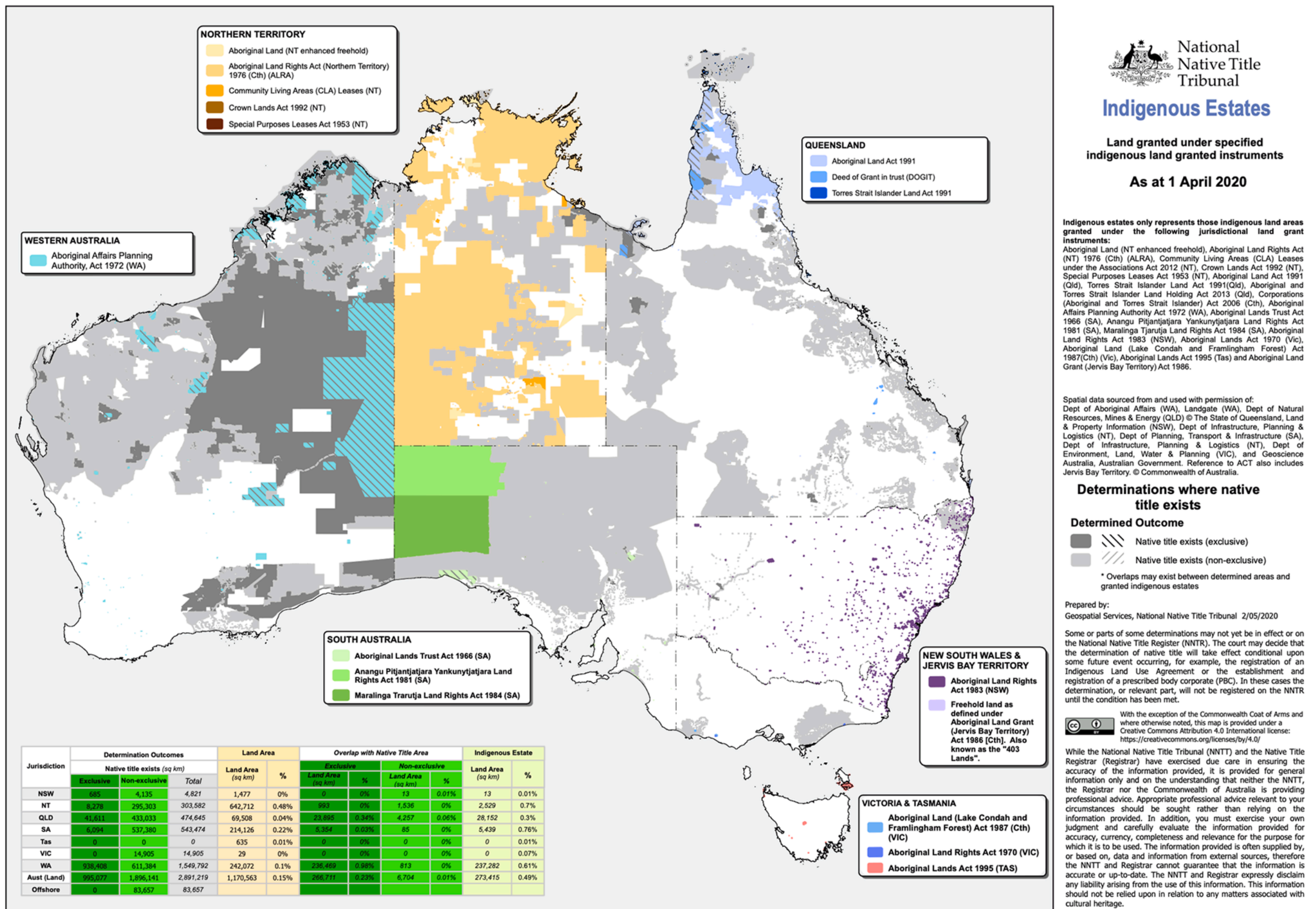


Fig. 1. Map of southeast Australia showing known cultural fire projects, native title determination areas and Traditional Owner Recognition and Settlement Agreement areas as at the end of 2019. Known cultural fire projects data is included as an estimate pending further research and not an authoritative representation of this region. The data used for this map is drawn from academic reviews (see McKemey et al. 2020, Smith et al. 2018), practitioner advice, government reports and news media. Image: Jennifer Sheehan (CC BY SA 4.0).

We contribute to an emerging body of global research concerned with intercultural fire management by exploring these emergent cultural



Jurisdiction	Determination Outcomes – Native title exists (sq km)			Land Area		Overlap with Native Title Area				Indigenous Estate	
	Exclusive	Non-exclusive	Total	Land Area (sq km)	%	Exclusive Land Area (sq km)	Exclusive %	Non-exclusive Land Area (sq km)	Non-exclusive %	Land Area (sq km)	%
NSW	685	4,135	4,821	1,477	0%	0	0%	13	0.01%	13	0.01%
NT	8,278	295,303	303,582	642,712	0.48%	993	0%	1,536	0%	2,529	0.7%
QLD	41,611	433,033	474,645	69,508	0.04%	23,895	0.34%	4,257	0.06%	28,152	0.3%
SA	6,094	537,380	543,474	214,126	0.22%	5,354	0.03%	85	0%	5,439	0.76%
Tas	0	0	0	635	0.01%	0	0%	0	0%	0	0.01%
VIC	0	14,905	14,905	29	0%	0	0%	0	0%	0	0.07%
WA	938,408	611,384	1,549,792	242,072	0.1%	236,469	0.98%	813	0%	237,282	0.61%
Aust (Land)	995,077	1,896,141	2,891,219	1,170,563	0.15%	266,711	0.23%	6,704	0.01%	273,415	0.49%
Offshore	0	83,657	83,657								

Fig. 2. The Indigenous estate across 'northern' and 'southern' Australia (National Native Tribunal 2020).

burning projects.[1] Drawing on interviews with 20 land and natural hazard management practitioners across southern Australia (Table 1), this paper examines bureaucratic dilemmas of persuasion, knowledge and authenticity that confront these nascent collaborations. The Aboriginal and non-Indigenous practitioners interviewed are all actively engaged in fire management projects with Aboriginal people, and pushing for the revival of cultural burning in a wide range of institutional contexts.[2] While sometimes drawing on common sources of support and information, participants are in the main independently pursuing intercultural fire management within their own agencies and locales. The participants in this study all identify as male and the non-indigenous participants all identify as white, reflecting a wider bias in the Australian fire sector (Eriksen, 2014; Neale et al., 2019b). The white interviewees primarily occupy technical rather than managerial roles, and are all tertiary educated, often with a background in the ecological sciences. Indigenous participants occupy a range of positions across both technical and managerial roles, with slightly lower rates tertiary education. In addition to state-based parks and rural fire services that hold the primary responsibility for fire management on public lands, interviews were conducted with employees of local governments, Aboriginal corporations, and other institutions concerned with the

Table 1
List of interviewees according to ethnicity, employer and location.

Total Interviewees		20
Ethnicity	Aboriginal	8
	White	12
Gender	Male	20
	Female	0
Employer	Aboriginal corporation	2
	Local council	3
	Parks service	6
	Fire service	2
	Other organisation	9
State	Queensland	3
	New South Wales/Australian Capital Territory	5
	Victoria	6
	Southern Australia	3
	Western Australia	2
	Tasmania	1

[1] We have made some pragmatic terminological choices for the purposes of this article. 'Indigenous' and 'Aboriginal' can be contentious terms in Australia, where individuals and groups may foremost identify as belonging to a more specific regional identity (such as Koori, Murri, Nunga, Palawa, Yolngu, Noongar, Anangu, or Torres Strait Islander). We use 'Indigenous' to refer to all Indigenous peoples in Australia and transnationally and use more specific terms where possible. While we recognize that a diverse range of terms are used to refer to Aboriginal fire practices across southern Australia, the paper uses 'cultural burning' because it remains the most widely used term among both participants in this research and Australia-wide discussions focused on (re) establishing Indigenous fire management.

[2] In line with the diversity and grass-roots nature of cultural burning revivals across the south, participants were employed at a wide range of institutions. The participants were recruited through a 'snowball' recruitment method, beginning with industry contacts from each relevant state and territory identifying key individuals engaged in existing fire management projects with Indigenous people that had completed at least one cultural burn within the last two years or were actively engaged in planning a cultural burning program. Interviews took place between 2018 and 2019.

management of the environment in varied capacities.

We find that the participants' experience and envision southern Australia's rural and *peri*-urban regions as both *bureaucratically and demographically dense*. This means that Aboriginal peoples' revival of their fire practices requires a close interpersonal engagement with a range of non-Indigenous institutions and individuals within Australia's settler-colonial legal and political infrastructures, whether to access the land, resources, certifications and/or the legal authorization necessary to conduct burns (cf. Norgaard, 2014; Lewis et al., 2018). As a result, both Aboriginal and non-Indigenous people now invested in reestablishing Aboriginal peoples' in the management of fire must work closely and sometimes awkwardly in this discriminatory and racialized context. In the wake of prolonged colonial violence, and the ongoing presence of settler-colonial government (Strakosch, 2016), our interviews demonstrate these actors work together to fix the boundaries of Indigenous peoples' environmental expertise and authority. We argue that not only are forms of hybridized knowledge 'co-produced' in such a context, but that the very boundaries of cultural difference and recognition are relationally negotiated in such bureaucratic settings. Such insights highlight how despite global enthusiasm, the revival of Indigenous peoples' fire management within existing wildfire policy in nations such as Australia is highly contingent and depends upon routine persuasive labour and fragile intercultural diplomacy. As such, it remains uncertain whether recent global enthusiasm and institutional interest will lead to more widespread and embedded institutional practices and policies to support cultural burning.

2. The labour of success in collaborative fire management

Collaborative forms of governance – known in various international contexts as joint, community-based or co-management – have emerged as central to environmental management as solutions to the perceived social and environmental failures of top-down and centralized state control of land and sea territories. While these arrangements are extremely diverse, these terms all broadly invoke varying degrees of devolution of decision-making and control to peoples, communities or individuals who have historically been excluded from centralized managerial processes. Collaborative environmental management has arisen as an institutional arrangement to (ostensibly) equitably share authority and expertise and, through tapping into pre-existing bodies of local environmental knowledge held by Indigenous people, potentially more effectively achieve ecological objectives (Stevens, 2014). The parallel, yet uneven, recognition of Indigenous peoples' rights to ancestral lands and territories has provided new incentives for this collaborative work, including opportunities for Indigenous peoples to access environmental monies and programs to do their own land management (Mackie and Meacheam, 2016).

Given these claims to both social justice and environmental outcomes, it is unsurprising that collaborative forms of management have been institutionalized by governments globally since the 1970s as one means to address the political concerns of historically marginalized peoples. In settler-colonial nations such as Canada, Aotearoa New Zealand and Australia, the need to reconcile environmental management practices with the growing recognition of Indigenous rights to land and sea has resulted in the wholesale adoption of co-management rhetoric and practice. At the same time, careful academic evaluation reveals that, despite a widespread narrative of 'success', these collaborative endeavors have produced decidedly mixed results (Nadasdy, 2003). The politics of collaboration has generated considerable academic debate over the actual extent to which local authority and control is supported, and for whose benefit (Dressler et al., 2010; Fache, 2014). Scholars engaged with Foucauldian critical traditions have further suggested that co-management structurally acts to contain and de-politicize Indigenous demands for greater rights (Youdelis, 2016), smooths over fundamental incompatibilities between the worldviews of Indigenous peoples and state environmental managers (Carroll, 2014), and in many cases does little to address the fundamental inequities wrought by histories of colonial violence (Coombes and Hill, 2005).

Despite this large body of global literature that both details and critiques collaborative forms of governance, research that substantively explores intercultural forms of fire management in practice is emerging but sparse (Thomassin et al., 2019; Mistry et al., 2019; Welch and Coimbra, 2020). Wildfire policies in fire-prone nations are politically contentious. Changes in policy are therefore associated with fierce debates over economic value and the science of prescribed burning, and as a result there are simply few examples where Indigenous peoples have been allocated substantive control over fire management in rural and *peri*-urban areas. As research in this space remains speculative (e.g. Lake et al., 2017) or historical (e.g. Gammage 2011) rather than descriptive, there are key questions that warrant greater investigation: How do Indigenous fire practices enter into and take hold in conservative fire bureaucracies? To build specific insights into intercultural management from the examples of collaboration in southern Australia, we turn to a growing tradition of engagement with Science and Technology Studies (STS) that focuses on routine and interpersonal bureaucratic practices of state agencies and other development actors (Li, 2007; Jasanoff, 2009). A central tenet of this work is to avoid generic 'oppositional' perspectives that pit 'locals' against state or non-governmental organisations by drawing attention to idioms of co-produced knowledge (Forsyth, 2020), 'collusion' or brokerage between state and non-state actors to negotiate seemingly fixed concepts (Mathews, 2009; Mosse, 2005) and the unruly quality of ideas that go beyond policy prescriptions (Smith and Dressler, 2017). Far from being strictly determined by prescriptive policies, therefore, intensely bureaucratic spaces of environmental management are important sites where nebulous concepts are relationally stabilized, reworked or contested among different actors.

The value of this approach when turned to the tentative global research on intercultural fire management is twofold. Firstly, recognizing and attending to the fluid and relational nature of bureaucratic practice is particularly significant in nascent spaces of collaboration that are not yet fully codified or formalized in policy, such as contemporary international efforts to revive Indigenous fire management (Fowler and Welch, 2018). In the absence of formal guidelines that provide clear prescriptions for intercultural resource management in many of these settings, a focus on the interpersonal social labour involved in sustaining collaboration, and the concepts that underpin them, helps better understand how these kinds of arrangement coalesce, take hold and 'become successes' in the absence of centrally mandated policies. Secondly, a focus on routine practices of knowledge and persuasion helps reveal how collaborations persist in the face of seemingly incommensurable objectives, knowledges and worldviews – key issues that are heightened in the politically contentious space of fire management throughout the world. This includes considering how appropriate environmental knowledge and modes of practice incrementally gain traction, the ways in which success is understood and practiced, and how notions of Indigenous tradition are articulated and navigated.

3. The uneven resurgence of Indigenous peoples' fire

The thesis that Aboriginal peoples in Australia have historically used fire to purposefully modify diverse landscapes for natural resource management, cultural wellbeing and other ends is well-established

within Australian archaeology, historical ecology and ethnographic work (Jones, 1969; Hallam, 1975; Bowman, 1998). Despite the devastating impact of British colonisation and settler-colonial occupation, some ecologists and anthropologists working with Aboriginal peoples in the north and centre of the continent have suggested that selected communities have experienced a relatively brief break in their use and knowledge of fire as a result of more recent and less intense experiences of colonial dispossession and violence.[3] Histories of connection are deployed by many practitioners interviewed for this research, in a general sense, as representing a 'more-or-less continuous' history of 'Traditional Ecological Knowledge' and limited bureaucratic governance in Australia's north. In a representative quote, a fire services employee suggested that 'the important difference between northern Australia and southern Australia… [is] continuous practice. Even if it's a modern practice in a fragmented landscape, it's still a continuum of fire [in the North]. Victoria… [I] don't know the exact words, but it goes along the lines: 150–200 years, Aboriginal people haven't been able to look after country' [Interviewee 16, fire service]. As one interviewee in the parks services described, this continuity connects contemporary communities in the north to an authority of practice 'based on that Aboriginal people [and] Torres Strait Islanders have lived in the continent for 60,000 years' [Interviewee 12, parks service].

The resurgence of Aboriginal peoples' fire use in Australia's more populous southern regions is complicated by being co-located with a dense web of commercial, state and private interests. Incremental land rights successes have helped shift some of these attitudes whilst also facilitating opportunities to burn land. Significantly, an Indigenous-led social movement within the last twenty years has sought to reintroduce Indigenous peoples' fire management, often termed 'cultural burning', into these more densely settled areas (Neale et al., 2019a). Characterizing this movement and its outcomes is difficult because of its shifting extent and composition, but it is currently comprised of a series of highly networked organizations with overlapping national and regional imperatives that aim to link Aboriginal and non-Indigenous cultural burning enthusiasts employed within land and fire management agencies (Maclean et al., 2018). These groups are focused largely on a combination of facilitating practical workshops in which specific techniques for burning are demonstrated, organizing talks by knowledgeable and charismatic individuals to raise awareness of Indigenous peoples' fire management and, in some cases, organizing and conducting burns themselves (Standley, 2019; Smith et al., 2018). Key organizations within this larger network, in addition to some Aboriginal and white interviewees, publicly trace the origins of the reestablishment of cultural burning to a series of Indigenous fire workshops held in northern Queensland since 2008 that have connected Aboriginal people from southern Australia with fire knowledge holders (Fig. 3). Sitting alongside these embodied experiences is the recent popularity of books that accessibly package historical evidence for Aboriginal peoples' natural resource management – such as Bill Gammage's *The Biggest Estate on Earth* (2011) and Bruce Pascoe's *Dark Emu* (2014). These have heightened public interest in cultural burning and attending cultural burns.

The small-scale but widespread cultural burning projects that now exist across temperate Australia have also been facilitated by a series of diffuse shifts in government policy that aim to support Aboriginal involvement in land and fire management. In some agencies, for example, cultural burning has been encouraged by top-down mandates from state institutions to mitigate the dominance of white male staff and increase workplace diversity (Neale et al., 2019b). According to interviewees, this general receptiveness within management structures – located in both explicit reconciliation policies or a less tangible shift in attitudes towards Indigenous peoples' social inclusion – has provided conducive environments for pushing a variety of projects that involve intercultural collaboration. As a bipartisan employment strategy (Mackie and Meacheam 2016), the Australian federal government has a series of programs to fund Indigenous ranger initiatives, including resources for burning activities. Specifically, these are Indigenous Protected Area (1997-present), Working on Country (2007-present) and Caring for our Country (2008-present) programs (Fache, 2014). The funding from these Indigenous ranger initiatives has been leveraged to provide resources for burning projects. While not focused on cultural burning *per se*, these wider and diffuse policy goals and instruments provide a general framework to build collaborative relationships surrounding fire. More recently, southern fire and land management agencies are also beginning to develop policy frameworks for 'cultural burning' (e.g. Williamson, 2015; NPWS, 2016; The Victorian Traditional Owner Cultural Fire Knowledge Group, 2019) and outline aspirations for 'inclusion' of and 'engagement' with Aboriginal peoples (e.g. DELWP, 2015).[4] All that said, almost no State or Territory jurisdiction in our study area has developed firm policy directives or measurable policy goals on cultural burning; many are obliged to vaguely 'support' cultural burning without actually having to achieve anything specific.

This convergence of grass-roots initiatives, the recognition of Indigenous peoples' land management responsibilities, reconciliation policies, and a growing receptiveness to cultural burning in many government agencies has provided a fertile context for dozens of diverse fire projects to emerge. Precisely quantifying this revival is challenged by the wide range of actors and jurisdictions involved, the intensely devolved nature of the cultural burning movement and the rapid pace with which Indigenous peoples' fire management is being adopted simultaneously but independently across the region. However, the extent of these projects is significant. All of Australia's southern jurisdictions now have active cultural burning projects for public lands that involve collaborations between Aboriginal peoples and government agencies at various stages of development (Maclean et al., 2018; Smith et al., 2018).

Nonetheless, despite the enthusiasm that surrounds these collaborative efforts, the frequency and coverage of cultural burns often remains unsatisfyingly small and infrequent for many of their proponents. Though rapidly increasing in some areas, cultural burning has only been incorporated into existing processes of land or fire risk management in a small number of examples, with no more than a few dozen cultural burns conducted on public lands in each southern state or territory. The small but growing application of Indigenous peoples' fire practices represents a tangible manifestation of returned and resurgent cultural practices and has been widely covered by regional and national news and institutional media as successful examples of intercultural collaboration (e.g. Waters, 2017; DELWP, 2017). This positive reporting, however, establishes a linear trajectory of success. This narrative obscures the considerable contingencies that are evident from closer study of these emergent collaborations and the experiences of both Aboriginal and white practitioners.

[3] For example, Bird et al. (2004) estimate that Martu people in Australia's Western Desert region only ceased their use of fire as a land management tool for a relatively short 28 years between 1953 and 1981. In the Northern Territory's Arnhem Land, Ritchie (2009) argues that Yolngu knowledge of fire management persisted through periods of forced relocation and sedenterization between the 1930s and 1950s, often practiced clandestinely through this period, and re-emerging as a modified practice during the co-management era in the 1980s. See also Fache and Moizo (2015).

[4] In its 2017-2018 budget, the Victorian government made an undefined commitment to 'increasing the use of Aboriginal fire management practices,' while the 2018-19 budget stated AUD$2.1 million would be allotted to 'improve [Indigenous] community connection and access to Country' (DTF 2017; DTF 2018). In 2020, the government further committed approximately AUD$1 million to develop a larger ongoing cultural fire program.

Fig. 3. Participants at the 2019 National Indigenous Fire Workshop. Photo: Timothy Neale.

4. Ongoing and emerging challenges

Interviewees appreciated cultural burning as a valuable opportunity for the meaningful involvement of Aboriginal peoples' in land and hazard management in temperate Australia. This is in contrast to the often disappointing and demotivating bureaucratic dampening of Indigenous peoples' agency that occurs in other forms of collaborative governance (Hartwig et al., 2018; Carter, 2010; Jackson, 2006). Instead, the contemporary revival of Indigenous peoples' fire management is seen by interviewed practitioners as a qualitatively different opportunity. Cultural burning projects provide an exciting and tangible manifestation of Aboriginal peoples' knowledge and environmental expertise in areas of Australia where it remains poorly recognized. With a few notable exceptions, most interviewees described their respective projects as highly successful at promoting meaningful empowerment in the management of Country, and, also envisioned a smooth, linear and inevitable trajectory of increasing Indigenous peoples' fire management over the coming several years.

Despite this optimism, the interviews reveal that Aboriginal people face considerable and distinct challenges in reviving traditions of fire management. Probing the challenges and histories of specific collaborations points to the fragile nature of this success, which stems from a need to navigate the demographic and bureaucratic density of these jurisdictions (see Smith and Morphy, 2007; Lea et al., 2018). As we later describe, this density entails considerable work in overcoming enduring contestations about the perceived authenticity and authority of Aboriginal peoples in southern Australia. Further, the uneven field of negotiation with non-Indigenous institutions arises out of the intensive history of colonial violence, segregation and exclusion that has dispossessed Aboriginal peoples of their land and land management responsibilities. In the words of one white fire manager, Aboriginal people in the south are seen by many participants to only have access to 'bits and pieces' of land for cultural burning [Interviewee 8, fire service]. In elaborating, he expressed the complications that arise from these heavily bureaucratic and developed landscapes:

> The other aspect that I think is interesting is, people look at what happens in other parts of Australia, particularly up north… where Aboriginal organisations actually manage large tracts of land as their own entity and I guess in that sense they would have a lot [of] freedom I suppose is one way to do it, about how they go about things. So you see these great images, people go and do these sessions up north and they're all walking around in jeans and t-shirts and not even wearing shoes and they look great and they're really tied in with what they're doing up there, but in Victoria we don't have the same situation. [Interviewee 8, fire service]

Fire presents particular problems in terms of negotiating nation-state bureaucracies and traditions, as the mitigation of wildfire is the subject of vast and conservative multimillion-dollar risk management infrastructure. Aboriginal peoples' use of fire in these more populated areas therefore faces intense institutional scrutiny, particularly on public lands where fire use has strict and binding regulation. In describing efforts to navigate this opaque bureaucratic field, interviewees consistently emphasized what was described as 'fairly entrenched racism' within government bureaucracies. In some cases, this racism was understood as an overt dismissal of Aboriginal peoples' knowledge and capabilities to manage fire. For example, one Aboriginal fire manager suggested:

> … you get a lot of the long-term fire fighters or people who've been on the ground and doing this for quite a few years. Some of them just have the wrong understanding, y'know. Being Aboriginal people there is a feeling that we get handed a lot of stuff without doing the hard yards. But with this sort of stuff there's a role for everyone in fire in Australia – how big the land is, how much we've got here – so people can contribute regardless of how long they've been around, and we're not here to take other peoples' roles and livelihoods. We're here to make the Country healthy. [Interviewee 2, parks service]

In other cases, interviewees also consistently noted it was latent bureaucratic inertia and unfamiliarity with Aboriginal people, rather than simply overt racism, that produced barriers to greater involvement of Indigenous practitioners. As one Aboriginal fire manager suggested, part of this resistance is the product of characteristically conservative institutional attitudes. In describing the willingness of colleagues to support the cultural burning project, he noted that:

> …it's sort of 50/50. There are a lot that are supportive of it, and quite openly supportive of it, and think it's a good idea. And those sort of guys, anything that benefits them they're quite happy to support, in

> the long term, like the science and all that, they're quite interested in. There's also the other 50 percentage, that are like, "well, what we're doing works, why are we bothering to change it?" And it's not even so much because it's Indigenous information it's just because it's anything. They're opposed to change. I mean there's always a percentage of racism there, but I don't think it's as large as it has been in the past. [Interviewee 5, local council]

In addition to the challenges arising from discrimination, racism and resistance to changing the status quo, fire management is also structurally laden with what are perceived to be onerous bureaucratic requirements, such as the credentialing needed to work with fire, the planning required to conduct burns and the need to wear, in the parlance of workplace health and safety regulations, Personal Protective Equipment (PPE). For many Aboriginal practitioners, these restrictions were a significant barrier to broadly held desires to involve the wider Aboriginal community, such as elders and children, in these events. White practitioners, in particular, also repeatedly spoke about the lack of formal government training programs for cultural burning advocates. One non-Indigenous state employee, for example, emphasized the complications arising from melding institutional requirements with cultural protocols:

> If a brigade is involved, there's certain things we've got to satisfy, like, got to have a uniform. And someone will say, "Cultural burns, [Interviewee 16 name]; should Aboriginal people have to wear PPE like ours?" and what we'd say is, it's got to be culturally appropriate. We need to develop governance and approval systems that are fit for purpose. If it's going to be fit for purpose… I mean, not wearing a bloody helmet. And all that's doable, and I can imagine something, eventually, like some sort of… bulletin, or publication, or policy, or whatever, that says… or a checklist. "For cultural burns, here's what you need to do. If you're a brigade member, or your brigade's involved, this is the expectations of your role. Wear your PPE, because you're working for the agency. [Interviewee 16, fire service]

Participants consistently suggested that many institutions, while broadly supportive of Aboriginal participation and workforce diversity more generally, remain largely unfamiliar with cultural burning and Aboriginal people themselves, are resistant to learning more, and therefore are skeptical of the value of Indigenous peoples' fire management. A white employee of an environmental non-governmental organization noted that support for cultural burning in fire agencies requires considerable effort that exists outside of prescribed training and existing biases. Australia, he suggested, '…is a very racist country… It's a very racist country, so there's resistance in really quite conservative organisations like the [Country Fire Authority], because… for all sorts of reasons, but one of the main reasons is just because people can't be bothered going and learning new things, and learning about fairly soft sort of things like health of landscape, or health of the plants and the animals, and Indigenous practices on the land. It's seen as very much a left-wing, wimpy sort of pursuit.' [Interviewee 18, other organisation]. For one Aboriginal land manager the lack of specific scientific evidence demonstrating the effects of cultural burning in temperate ecologies remains a key barrier to the adoption of Indigenous peoples' fire management practices. Reflecting on the epistemological demands of government decision-makers, he suggested that 'they still wanna see that proof when it comes down to it. "If we're gonna invest in this, if we're gonna put money forward, we actually need to see [the evidence]." It's all well and good to see the warm and fuzzy, what they call "the warm and fuzzy stuff' and that's how it makes people feel' [Interviewee 9, local council].

Finally, alongside navigating interpersonal and bureaucratic constraints, most participants also suggested that Aboriginal people faced distinct socio-economic disadvantages resulting from colonization that affect fire revitalization projects. While not explicitly referencing processes of colonization or histories of violence of dispossession, most white and Aboriginal participants recognized that structural issues, such as poorer health and education outcomes for Indigenous people, are a key barrier facing collaborative projects. When asked what the largest barrier to greater Aboriginal inclusion in the natural hazard sector, one Aboriginal fire manager explained that given the increasingly bureaucratic nature of fire management education is 'probably the biggest issue. Um, they're [Aboriginal people] more than willing to get out there and do the hard work and all the rest of it, but a lot of the guys and girls too, struggle with their reading and writing skills' [Interviewee 5, local council]. In response to the same question, another tertiary educated Aboriginal land manager reflected on his own privilege relative to the disadvantage faced by many Aboriginal Australians, noting that 'I've not had the same social pressures that many Aboriginal people have had growing up and the challenges they've had and I've had a full education and got a degree and I'm in a government job…I do know everyday existence for Aboriginal people is the state of health, the housing they're living in, the economic pressures and the fact they don't have a job, the social pressures' [Interviewee 9, local council]. These pressures, he explained, occupy attention away from involvement in land management such as cultural burning. Amongst white practitioners, there was less specificity in terms of colonization's impact and instead a more general recognition that about peoples have suffered histories of dispossession and violence, or in the euphemistic words of one fire manager a history of 'not being treated very well' [Interviewee 16, fire service].

This interrelated set of challenges is by no means seen by practitioners to be insurmountable, but the perceived demographic and bureaucratic density of the fire management context means that, for the time being, Aboriginal peoples must frequently collaborate and work intensively with non-indigenous people to achieve even small gains.

5. Problems of analogy and culture

Alongside the bureaucratic problems outlined above, all participants also emphasized the role of cultural difference in discussing collaborative fire management. For Aboriginal participants, cultural distinctiveness was generally framed in a positive light. Their responses focused around the role that Aboriginal knowledge and distinctive relationships to the land, or 'Country', can bring to collaborative forms of fire management. This importance was reflected in the consistent reference to Indigenous fire management as 'cultural burning' or the role of 'cultural fire practitioners'. While issues of racism and white skepticism are key barriers for Aboriginal peoples seeking to revive Indigenous fire management, these issues were not formulated as problems of 'white' culture. However, there was a general view among Aboriginal participants that the institutional cultures of state hazard and land management agencies were sometimes incompatible with Aboriginal worldviews. For example, an Aboriginal employee of an Aboriginal corporation articulated this problem in terms a wider 'mind-set' of land and fire agencies who had 'closed the door' on cultural knowledge:

> I think that one of the biggest challenges is…. is a mind set. I think "hazard", y'know, I guess, protecting life and property as a primary focus and maybe moving down to protecting the environment and then maybe this blurry thing that people hear about and don't really understand – that's cultural burning. I think that understanding that all of those things can be achieved, 'cos Aboriginal people don't differentiate any of those values or objectives to fire. Cultural burning achieves all of those objectives when done correctly and helps balance systems out. [Interviewee 1, Aboriginal corporation]

For many white participants cultural difference was less frequently understood as an unmitigated good, and was both explicitly and implicitly positioned as a risk that required careful management in collaborative endeavors. In the words of one non-indigenous interviewee, 'there will always be challenges around the way that both the

cultures interact with each other' [Interviewee 12, parks service]. The historical lack of collaboration in much of southern Australia means that many key state organizations have extremely restricted institutional or personal experience to draw upon, and no or few formal policies for engaging with Aboriginal peoples as individuals or groups. White practitioners in particular were challenged with understanding and navigating these potentially fraught relationships in the absence of established networks and accreted experience, as well as limited or no institutional guidelines.

The white interviewees more readily identified forms of Aboriginal cultural difference as a persistent barrier to successful collaboration, despite being interviewed on the basis of their supportive participation in cultural burning projects. One state ecologist noted that after working closely on a fire management project with Aboriginal people for several years, 'I have to admit that I don't have much patience to work with Aboriginal people any more [laughter]. And "patience" is the word, it's a different pace' [Interviewee 7, other organisation]. Another example was about the political tensions surrounding community life. One white practitioner explained that 'at their [Aboriginal land corporations] there's politics and arguments, and [that] spills onto the ground in front of other Aboriginal people and other white people that are there to do a job and I guess for us that's going to be a bit of a challenge' [Interviewee 3, parks service]. In the face of little or no formal institutional guidance or track record of cooperation in their present contexts, white interviewees universally identified the importance of the site-specific development of personal and institutional relationships over time. When asked if he had modelled his collaborative practice on existing examples of collaboration in Australia, one white fire manager described, 'it probably happened more as a continual evolution of what the relationship we had in place. The models that I'd seen from elsewhere in Australia I don't think they fit here' [Interviewee 8, fire service].

With little institutional guidance, many of the white practitioners emphasised that managing interpersonal dynamics or 'getting the right staff' is critical to navigating intercultural tensions and building local forms of trust, and this often involved employing people with experience working or socially interacting with Aboriginal people in 'remote' and 'northern' Australia. For example, one white parks manager cited previous experience living in the Northern Territory as sites where 'you sort of get to know them [Aboriginal people]' [Interviewee 3, parks service]. He emphasized this appreciation and competency in other staff as critical to the success of the project:

> … if we don't have the right staff, if we get some of these fellas that come along, particularly, don't see the value in it and sort of really disagree with co-management that can sort of upset relationships pretty quickly and then, then you take a long time to end up, um, repairing the damage… if we do get the wrong people we've gotta try and move them on before they do that damage.

Similarly, a white fire manager emphasized this kind of competence and personalized support from sympathetic managers, rather than any institutional mechanisms. In emphasizing the contingent nature of the cultural burning project, he suggested that:

> Look, at the moment it's hanging together on the basis of the managers that we have and it could fall apart on that basis as well. So I can see people, who I respect and would do a fantastic job in my role – I mean, the manager of our whole division is also an experienced, um, experienced manager from northern Australia so we have really good support all the way out, quite high. But I still think there's a disconnection between what you actually have to do. You have to give to the program, you have to take, you have to take, take it on the chin, to make sure things go right, to help. In my case, to help my Aboriginal colleagues to get to where they want to go. You've gotta do things that aren't actually my job, if you see what I mean. [Interviewee 13, parks service]

In some cases, this experience directly related to fire knowledge, and one white ecologist suggested that his previous work in the remote Northern Territory guided both his understanding of fire and working relationships with Aboriginal people: 'I got to know Aboriginal people and a little bit about how they think and work and how to relate to them. And, um, y'know that informs my ecology as well, it's patently obvious when you live with Aboriginal people they use fire like a vacuum cleaner, it's institutionalized cleaning your Country' [Interviewee 7, other organisation].

6. Persuasion in the bureaucracy

How can collaborations be initiated and sustained in the face of limited institutional support, rigid bureaucratic requirements and widespread views of cultural difference as an obstacle to success? For many interviewees, overcoming these challenges involved considerable and diverse forms of persuasive labor aimed at achieving an overlapping set of goals: generating enthusiasm, allaying the fears of co-workers and publics surrounding fire and establishing both the environmental and moral authority for Aboriginal peoples' involvement in natural resource and land management. It was a common view across participants that their projects and actions were part of a larger movement aimed at transforming others' values and opinions, regardless of the scope of their specific projects or networks.

A key strategy that practitioners in this space employ to achieve these goals are formal presentations about cultural burning to colleagues within their own organization or at other government departments, where audiences may be broadly receptive to wider goals of Aboriginal empowerment but remain uncertain or dubious about cultural burning. For example, an Aboriginal corporation employee highlighted the efficacy of formally organized workshops that aimed to bridge conversation between expert Aboriginal fire practitioners and skeptical government employees: 'The knowledge sharing workshops, those workshops with the rural fire workshops, that's key to turning that around' [Interviewee 1, Aboriginal corporation]. For white practitioners, such workshops provided an important bridge between Indigenous perspectives and their own scientific training in ecological sciences, sometimes mollifying fears about incompatibilities between Indigenous environmental knowledge and their own understandings of ecologies. One state-employed risk manager, actively involved in promoting cultural burning to colleagues and publics, emphasised the transformative nature of these practices, noting that 'you can see the lightbulb moments go off for people and in speaking to them it's actually within them. It's spiritual. It's actually knowing it and believing it.' [Interviewee 14, other organisation]. Another white natural resource management officer emphasized the efficacy of these talks on his own professional practice. When asked whether he has had difficulty navigating both his scientific training and working within an emerging Indigenous paradigm, he responded that:

> [We] had a guy come up and do discussions and training on Indigenous fire management, and the way that he discussed stuff was very much common sense, it was a bit of a light-bulb. I didn't feel challenged by it or, like, for me it definitely made sense and you could see that the fire guidelines that they generally go off are very scientifically-based [Interviewee 4, local council].

Another highly valued strategy for demonstrating the efficacy and impact of Aboriginal environmental knowledge, alongside the creation of tangible and durable forms of expertise, was performing cultural burning itself. Many interview participants, including most Aboriginal participants, held the persuasive value of burning demonstrations in high regard, particularly for an audience of skeptical colleagues or neighboring residents. For many participants, this belief was explicitly derived from their own initial engagements witnessing or conducting a cultural burn 'on Country', often during workshops held in northern

Australia. These burns provide a space where, in the words of an Aboriginal land manager 'people are just getting together and witnessing something that, they have, that has a totally other concept in terms of fire' [Interviewee 9, local council]. Contrasting oral presentations with burning, he continued 'I'm happy to do presentations but I'm much more happier to do a burn with people when they can actually see it for themselves, that's the most powerful thing.' Another Aboriginal land manager in New South Wales [Interviewee 20, Aboriginal corporation] emphasised the collaborative opportunities afforded by performing burns;

> Yeah, well, there wasn't much engaging before, but I think it's improving through having conversations with guys, but the best place for the conversation is out on Country when we're doing burns. So, when we burn, we invite some [rural fire service] members to come along and when we're in that space, we can really have a meaningful conversation and attitudes change.

He continued, noting the transformative nature of experience a burn. During a recent event 'one of the old fire crew guys come up and they said, "Mate, I've come here sceptical, but now I'm going away a believer." He really believed in it, so we changed attitudes and we changed the way they want to look at burn.'

At the same time, some participants did recognize that, due to the inherent dangers of landscape fires, practitioners needed to perform Indigenous expertise with caution. One Aboriginal fire manager noted that cultural burning proponents need to 'be very careful we don't get things wrong. Um, because the more of the positive outcomes we get the more accepted it'll be, it'll spread to the neighbouring shires and all the local governments' [Interviewee 5, local council]. Another Aboriginal researcher, working for a non-governmental research organisation, emphasised this problem remains a barrier to the decentralized experimentation with fire management; 'my concern is I bet you it would only take one Traditional Owner to lose a burn in the middle of Winter and burn down a hay shed, that would just stuff it. That's the risk' [Interviewee 17, other organisation]. Managing perceptions, especially, was a widespread concern as an Aboriginal land manager described [Interview 19, local council]:

> I think, if a burn got out of hand, out of control, and then the [news] media jumped on it, I think that could really – yeah, and you know, if someone lost their life, or houses got burnt, I think that could really – but you know, that's just – but that happens with hazard reduction burns, and with burns that happen now, but I think if the media got hold of it, and it was promoted as a cultural burn that – you know, like I think that could really be quite damaging.

In a permutation of this strategy, several projects had also invested effort into the creation of more durable manifestations of Indigenous peoples' environmental knowledge that could travel beyond the relatively restricted medium of attendance at a rare demonstrative burn. This work is especially important in the context where scientific exploration of cultural burning practices remains limited (McKemey et al., 2019). One example of this strategy are efforts to produce seasonal calendars that transpose Aboriginal fire regimes and local language terms onto Western temporalities and climatology (e.g. BoM, 2016; McKemey et al., 2020). Other examples include the production of sometimes lavish short videos that provide clear descriptions of Indigenous peoples' fire management and its application in specific areas. More generally, interviewees hoped to build a body of co-produced academic research and other forms of stabilized knowledge between Aboriginal communities and research institutions. For example, an Aboriginal planning officer employed by a local council aimed to 'try and approach a couple of universities and get them interested, whether it would help any of their [research], there must be someone doing a thesis on some sort of thing like that, that would be very interested in coming down and having a look' [Interviewee 5, local council]. Recognizing the strategic value of linking Indigenous management into ongoing policy concerns surrounding Indigenous health (see Lea, 2008), one white participant saw value promoting research that connected cultural burning to 'that health and well-being space, certainly for Aboriginal communities, getting them involved in cultural burning and as part of their reconnection to Country and learning cultural skills' [Interviewee 9, local council]. For Aboriginal people, he reasoned, 'health and education, and environment, they're all sort of tied in anyway.'

In addition to formal presentations, demonstrative burns and the creation of durable and authoritative forms of Aboriginal knowledge, many interviewees also emphasized the everyday work they personally do to persuade colleagues that greater participation by Aboriginal people in land management is morally justified. Indeed, participants viewed the interest and sympathy of non-indigenous actors within larger nation-state institutions as vital for the success of many cultural burning projects. In the words of one Aboriginal fire manager, the success of their own involvement and advocacy for Indigenous fire management was seen to be dependent on others' receptiveness:

> I think just the interest that non-Aboriginal people have got now. Yeah, there's such a massive interest, there's a lot of talk now and that's great for Aboriginal people and fire I suppose. With the current climate of fire here at the moment we're getting massive fires, wildfires, and, um, everyone's talking about [how] they're only gonna get bigger. So, a lot of this talk now revolving around a lot more burns but on a smaller scale and people got that interest now in what it entails and how they can be involved. [Interviewee 2, parks service]

Generating and curating this form of enthusiasm is a form of interpersonal labour poorly captured in the existing literature surrounding collaborative resource management, but interviews indicate that it is viewed as both vital and onerous by Aboriginal and non-indigenous participants alike. Many interviewees viewed educating their colleagues and publics about Australia's violent colonial history and cultural burning as intimately linked. One white fire manager, for example, identified the values and opinions of their immediate colleagues as one of the primary fields of persuasive action: 'my whitefellas colleagues need to learn, and that's a really important part of my role. So, we're making some progress. Fuck, it's hard. It's hard to change that' [Interviewee 13, parks service]. Many of these conversations occur outside of formal workplace interactions or presentations, and are located in, as one Aboriginal local government employee noted, 'raving on about it in the office' [Interviewee 9, local council] or the 'time and effort put into banging on the drum and, um, explaining things and getting people's education up on it' [Interviewee 5, local council]. At the same time, participants also recognized the fragility of advocacy dependent on the enthusiasm of volunteers. For example, a white employee of an environmental non-governmental organisation [Interviewee 18, other organisation] explained the vulnerability of current trends that see interested fire managers travel to indigenous fire workshops in Australia's north: 'they all come back really enthusiastic, then there's nothing they can actually do with that enthusiasm when they get back here, because when they go back to [their organization] and try to start things up, there's nobody there that jumps on it. So they're basically then left to… and then it just dies out. Peters out again. So even though there's momentum, that momentum gets killed off by lack of enthusiasm. And because most of these people are volunteers, they put in what energy they have, and then when there's no immediate impact, they sort of sizzle out'.

7. Discussion and conclusion

While internationally, and in Australia, public and popular narratives surrounding the incorporation of Indigenous fire management into

existing wildfire policies were near-universally optimistic, linear projections of success, thereby obscuring the potentially fraught underlying social contexts and the distinctive challenges that face the reestablishment of Indigenous fire management. As we demonstrate through our examination of practitioner involvement in diverse cultural burning collaborations, both Aboriginal and white practitioners must routinely work to assert Aboriginal peoples' authority and stabilize hybridized and fluid forms of environmental knowledge in the context of neocolonial experiences. This labour is varied, encompassing efforts to: perform demonstrative burns in which the reality of Indigenous peoples' knowledge, rights and expertise are made tangible; generate excitement for cultural burning at workshops and through presentations to colleagues; and, manage dense bureaucratic processes and institutional and individual relationships to support projects. Furthermore, while often highly supportive of intercultural management practices, white practitioners often framed Aboriginal culture as a risky variable in the already contentious work of fire management. Nonetheless, cultural burning projects in practice involve enthusiastic white practitioners closely coordinating with, rather than simply drawing from or representing, Aboriginal peoples. We found that these practitioners jointly shape highly-localized forms of cultural difference and smooth over tensions wrought by intensive colonial histories.

In reviewing practitioner perspectives on the development of diverse projects of Indigenous fire management in southern Australia, we argue that there is a greater need to focus on the routine and interpersonal practices of collaboration that remain poorly explored within the literature surrounding environmental management. Literature focusing on intercultural and collaborative management has tended to provide prescriptive recommendations, critical reflections, and/or potential frameworks that can 'integrate' divergent knowledge traditions and smooth over cultural difference between Indigenous peoples and state institutions of land and natural resource management (Altman and Kerins, 2012; Ens et al., 2012; Davies et al., 2013; Berkes, 2009). The more recent critical literature focusing on the bureaucratization of cultural difference has aimed to look beyond integrative efforts by aiming to 'take seriously' Indigenous peoples' ontologies in natural resource management (Muller, 2012; Howitt and Suchet-Pearson, 2006; Suchet-Pearson et al., 2013; Castro et al., 2016; Schroeder, 2019). Both scholarly approaches position Indigenous peoples as inhabiting epistemologically or ontologically distinct worlds (Bessire and Bond, 2014). In doing so, we suggest, such approaches obscure not only the micropolitics of knowledge production but also the ways in which cultural difference itself is relationally negotiated in such bureaucratic settings.

For enthusiastic practitioners working in this space, these insights have important implications for their efforts to expand existing collaborative arrangements, and for other environmental management collaborations more broadly. Our research into the frontlines of cultural burning reveals the highly contingent and unstable nature of Indigenous peoples' involvement in public sector land management. It is an open question as to whether the present formations, sustained through the enthusiasm and persuasive labor of their proponents, will transition into more formal institutionalization in the context of unprecedented wildfires unfolding across the world over the past several years. Inscribing cultural burning within the architecture of southern Australia's fire and land management bureaucracies would unquestionably change the emergent social movement that is currently sustaining cultural burning projects, swapping degrees of autonomy for degrees of security. The drivers of social action would likely change from passion and promise to those of policy implementation and evaluation. That said, our interviewees were apt to remind us of how Indigenous-led and Indigenous-focused initiatives typically have a tenuous existence in the fickle budgetary environments of settler-colonial governments. High-achieving projects can simply disappear in the fog of three- to five-year discretionary funding cycles. Without the assurance of quantifiable policy aims and explicit budget lines, these governments and their agencies could go on ostensibly supporting cultural burning without practical changing their policies or practices, potentially missing opportunities for cultural burning supporters to capitalise upon their own persuasive labour and the unprecedented level of interest in Indigenous peoples' fire management.

CRediT authorship contribution statement

Will Smith: Conceptualization, Methodology, Investigation, Writing - original draft. **Timothy Neale:** Methodology, Writing - review & editing. **Jessica K. Weir:** Methodology, Writing - review & editing.

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