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# How bureaucracies interact with Indigenous Fire Stewardship (IFS): a conceptual framework

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## Abstract

**Background** Indigenous Fire Stewardship (IFS) is contested within settler-colonial contexts, where its development is shaped by complex and dynamic socio-cultural, legal, and political factors. This manuscript draws from the policy sciences to sketch out a “zone of interaction” between IFS and the state’s wildfire policy system. Drawing from the strategies of bureaucracies, our goal is to illustrate the patterns in this “zone of interaction,” and to identify the implications for IFS, as well as for Indigenous Peoples and landscapes.

**Results** Drawing insights from the Australian and Canadian contexts where governments are restoring lands and reconciling with the laws and governance of Indigenous Peoples, we illustrate how IFS interacts with the state. We do this in two ways. Figure 1 shows that the state has three general strategies for dealing with IFS: *avoidance* (ignoring IFS), *coping strategies* (carefully considering and sometimes accommodating IFS), and *learning* (embracing and accommodating IFS). We document that post-wildfire, there are affective drivers that move the state’s approach from *avoidance* to *learning*; however, over time, as public attention shifts away from alternatives, the strategy moves back to either *avoidance* or *coping strategies* (where the state is required to engage with IFS, but cannot fully embrace it because of institutional, tenure, or jurisdictional issues, among other constraints). Figure 2 documents the six coping strategies available to bureaucracies in dealing with IFS, which either *institutionalize*, *partially institutionalize*, or do *not institutionalize* IFS. Each of these pathways has implications for IFS, and the manuscript details the effects on IFS practices, and the impacts for people and landscapes.

**Conclusions** To better support IFS, we must look beyond the *institutionalization* of IFS within the state, and nest IFS within Indigenous laws and governance. An Indigenous-led IFS approach can operate in parallel with the state, and develop innovative land-access arrangements and Tribal Parks to apply IFS to landscapes. New structures of engagement must be designed for this parallel space, grounded in the principle of free prior and informed consent (FPIC), and with explicit focus on deconstructing power differences.

**Keywords** Indigenous Fire Stewardship (IFS), Wildfire governance, Policy studies, Indigenous Peoples, Value conflict

## Resumen

**Antecedentes** La gestión y custodia ancestral de fuegos por comunidades indígenas (IFS), ha sido cuestionada en el contexto de la colonización, la cual su desarrollo, ha estado modelado por factores socioculturales, legales y políticos complejos y dinámicos. Este trabajo extrae conceptos de las ciencias políticas para bosquejar una “zona de interacción” entre la IFS y el sistema estatal de manejo del fuego. Tomado de estrategias de la burocracia, nuestro objetivo

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fue el ilustrar los patrones en esta “zona de interacción”, e identificar su implicancia para la IFS, como así también para las comunidades indígenas y los paisajes.

**Resultados** Tomando percepciones de contextos canadienses y australianos en los cuales el gobierno está restaurando tierras y reconciliándose con las leyes y la gobernanza de los pueblos indígenas, ilustramos cómo el IFS se está modelando a través de sus compromisos con el estado. Hicimos esto de dos maneras: la Figura 1 muestra que el estado tiene en general tres estrategias para tratar con el IFS: evitándola (es decir ignorando el IFS), adecuándola (considerándola cuidadosamente y algunas veces contemporizando su adecuación), y aprendiendo (es decir adoptando y adecuando IFS). Documentamos que en el post-fuego, existen procedimientos efectivos que cambian la visión del estado y que van desde el evitar hasta el aprender: Sin embargo y con el tiempo, a medida que la atención del público cambia de alternativas, la estrategia se retrotrae hacia evitar o adecuar (donde se requiere que el estado se comprometa con el IFS, pero que no lo adopte totalmente, debido a cuestiones institucionales, de tenencia o jurisdiccionales, entre otros condicionantes). La Figura 2 documenta las seis estrategias de adecuación disponibles para las burocracias para tratar con IFS, que proponen institucionalizar, institucionalizar parcialmente, o no institucionalizar el IFS. Cada uno de esos caminos tienen implicancias para el IFS, y este manuscrito detalla los efectos en las prácticas del IFS, como así también para la gente y los paisajes.

**Conclusiones** Para apoyar mejor el IFS, debemos mirar más allá de su institucionalización, y relacionar el IFS con otras leyes y gobernanzas de los pueblos indígenas. Una aproximación orientada del IFS de los pueblos indígenas puede operar asimismo en paralelo con el estado, y desarrollar arreglos innovativos de acceso a la tierra con parques tribales para aplicar IFS a los paisajes. Nuevas estructuras de compromiso deben ser diseñadas para este espacio paralelo, basado en el principio de consentimiento de información previa y libre (FPIC), y con un enfoque explícito en deconstruir diferencias en relación al poder.

## Introduction

After generations of being ignored, Indigenous Fire Stewardship (IFS) is now being revitalized on landscapes. Driven by catastrophic wildfires in parts of Australia, Canada, and the United States, and increasing scholarship, support for IFS is growing among the scientific community. It is also growing, to some extent, in the policy community, as reflected in a recent report from the Biden-Harris administration’s Wildland Fire Mitigation and Management Commission.<sup>1</sup> However, the *institutionalization* of IFS, or its adoption into state wildfire bureaucracies, is contested within these settler-colonial contexts (Nikolakis and Roberts 2022; Williamson 2022), with state wildfire agencies caught in a “fire-fighting trap” (Xanthopoulos et al. 2020), where there is a reactive focus on putting fires out if and when they arise, with the help of the latest in technology (Afghah et al. 2019; Erikson and Hankins 2014; Coogan et al. 2021; Marks-Block and Tripp 2021). Xanthopoulos et al. (2020) argue that this fire-fighting trap is “a simplistic reply to a complex social phenomenon” (p. 146), which is politically expedient (and socially preferred) compared to more preventative or proactive approaches that involve diverse actors to mitigate wildfires. IFS is a proactive approach, focused on people intensively stewarding the land guided by

Indigenous knowledge, and often using low intensity fire during early spring and late fall in fire-dependent ecosystems, to build landscape resilience against wildfire (Steffensen 2020; Lake and Christianson 2020; Eisenberg et al. 2024).

Rooted in Indigenous laws, IFS is not only about reducing fuel loads to mitigate the intensity of wildfires, but is also about promoting landscape regeneration for food security, among other goals (Lake and Christianson 2020; Steffensen 2020; Nikolakis and Ross 2022; Nikolakis et al. 2020). Revitalizing IFS means not only rethinking wildfire and land governance practices to accommodate Indigenous ways of knowing and practice, but also opening up questions of land rights and access; and because of this, reconciling these matters in settler-colonial contexts has proven challenging (Long et al. 2021; Neale et al. 2019).

Policy theories tell us that when bureaucracies face conflicting values, like those that characterize IFS, they can (1) ignore these values (*avoidance*); (2) cautiously engage with these values and fully or partially institutionalize them or not (*coping strategies*); or (3) embrace and accommodate these values (*learning strategies*) (Meijer and Jong 2020). Drawing from the Australian and Canadian contexts, we develop two conceptual models to demonstrate how bureaucracies engage with IFS: one details the patterns and relationships of *avoidance*, *coping strategies*, and *learnings* with IFS; and the other maps out the effects of *coping strategies* on IFS, its institutionalization, as well as the implications for people and landscapes.

<sup>1</sup> See <https://www.usda.gov/sites/default/files/documents/wfmmc-final-report-09-2023.pdf>.

These conceptual models offer a point of reflection for engagements between the state and Indigenous Peoples around IFS, and in the spirit of true reconciliation, and consistent with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) (2007), argue that we must look beyond *institutionalization* and co-governance towards parallel Indigenous-led approaches that are co-ordinated with state-led approaches.

## Context

### Values and fire in contested landscapes: Australia and Canada

Landscapes across Australia and Canada have been shaped by fire, and in many cases need fire to regenerate. For millennia, Indigenous Peoples applied fire to landscapes in the cooler months (early spring or late fall) to remove dead grasses and other vegetation (fuels), which in turn created regrowth and food for animals during the spring and summer (Lake and Christianson 2020; Steffensen 2020). These IFS practices were largely removed from landscapes as Indigenous Peoples were dispossessed, and isolated on smaller reserves that restricted their stewardship activity (Nicolakis and Roberts 2020; Neale et al. 2019). Removing IFS has meant many landscapes are now unhealthy, with fuels building up and in many examples, resulting in high severity wildfires (Lindenmayer et al. 2009; Parisien et al. 2020). At the same time, both governments, with significant “public” (or Crown) land bases, are settling the “land question” with Indigenous Peoples. These governments are actively seeking to reconcile their own laws and values with those of Indigenous Peoples (see Gover 2015, Nicolakis 2019), which includes recognizing and supporting Indigenous knowledge and stewardship of landscapes, like the re-activation of IFS. For example, the UNDRIP, with its focus on advancing Indigenous self-governance, has been incorporated into Canada’s positive law through statute (the UNDRIP Act 2021), and affirmed in jurisprudence as shaping the interpretation of relevant legislation. However, progress has typically been slow—particularly land back initiatives—which are a polarizing concept in these settler states (see Nicolakis 2020).

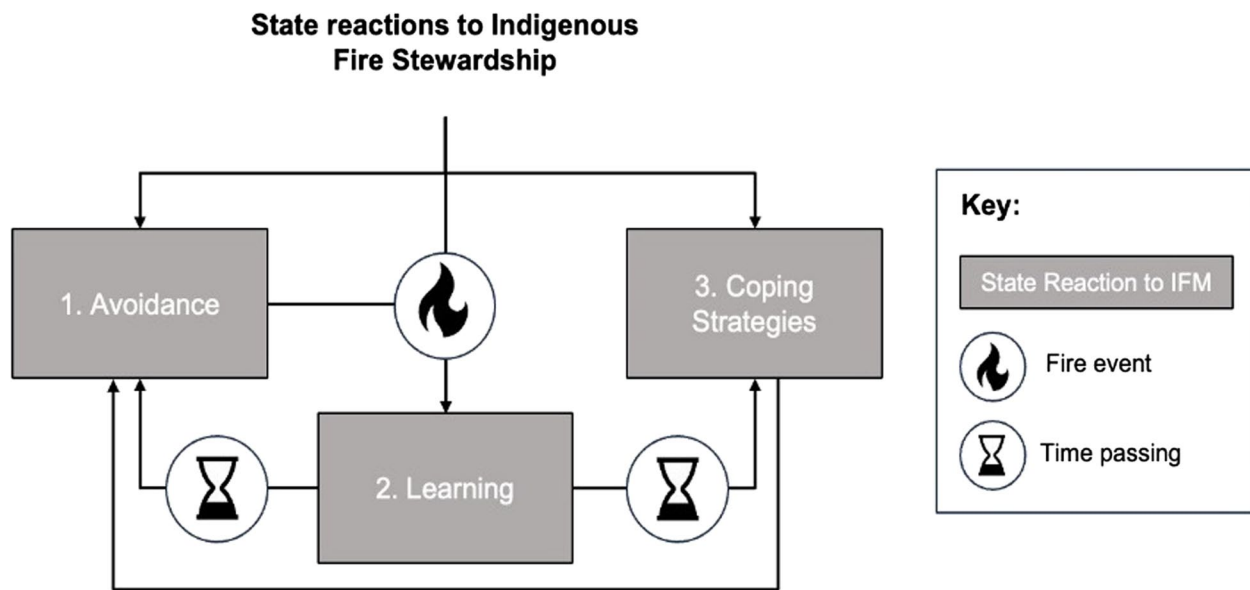
Both countries have experienced an increase in catastrophic wildfires and IFS is identified as one way to address wildfire risk (Nicolakis and Roberts 2022; Smith et al. 2021), but there remain conflicting values with the state’s wildfire approach, which inhibits the development of IFS through highly bureaucratic and technical processes (Hoffmann et al. 2022, Williamson 2022). Western cultures typically view nature and people as separate, and land use and governance are shaped by individual property rights, which dictates the land and fire management regime (a human-centered approach), while Indigenous

cultures typically see people and nature as being interconnected or “one,” and people have sacred responsibilities to steward the land—a relationship rooted in principles of reciprocity and respect (an earth-based approach) (Steffensen 2020). The state’s wildfire approach is largely about disaster management, mitigating wildfire (or bushfire) risk for community safety and property, and sustaining recreation, conservation, timber, and range values.<sup>2</sup> IFS has goals such as using fire for cleaning the landscape, for ceremony and law, for reducing wildfire risk, and improving food security and food availability for deer and moose in Canada (Nicolakis et al. 2020) or kangaroos and other animals in Australia (Bliege Bird et al. 2018). While there are overlapping goals, there are important differences, with implications for how (and whether) IFS is given expression on landscapes.

For example, while there were affective motivations in support of IFS following catastrophic wildfires in south-eastern Australia during 2020 (Beggs and Dalley 2023), Smith, Neale, and Weir identified the “fraught underlying social contexts” in which IFS was developing (2021: 91). This included perspectives that Indigenous culture was a “risky variable” in wildfire governance, and there was skepticism around IFS among non-Indigenous fire practitioners as it was empirically unproven. What this means is that IFS was largely precluded in the “*bureaucratically and demographically dense*” peri-urban regions (italics in original) (Smith et al. 2021: 85), and any IFS initiatives were unstable and contingent on interpersonal negotiations, persuasive labor, and the micropolitics of cross-cultural knowledge production. In many parts of Australia, IFS is often applied on one-off examples or on a case-by-case basis (or what we term later, a *casuistry* approach), and where it does occur, Indigenous values seldom lead the process in applying fire to land (Williamson 2022). There are examples of IFS occurring continuously in southern Australia (see Weir et al. 2021), and there are examples across Indigenous land tenures in the nation’s northern tropical savannas, where Indigenous Peoples have continuously applied fire to the land in the early dry season (Yibarbuk et al. 2001). In a number of areas across the savannas, IFS is generating and selling carbon credits, which is enabled through a supportive institutional framework and funding expansive IFS activity (Yates et al. 2023).<sup>3</sup>

<sup>2</sup> See, for example, British Columbia’s Wildfire Service’s mandate, at <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/governance/mandate-strategy>. Also see in Australia, the Queensland Fire and Emergency Service’s Bushfire Prevention & Preparedness report, at <https://www.qfes.qld.gov.au/sites/default/files/2021-03/QFES-Bushfire-Report.pdf>.

<sup>3</sup> The Firesticks Alliance is moving away from carbon-credit funded IFS programs to “cultural fire credits” and social enterprises derived from enhanced stewardship (such as the gathering and sale of non-timber forest products) (see <https://www.firesticks.org.au/cultural-fire-credits/>). These



**Fig. 1** Avoidance, coping, and learning strategies and IFS

Like Australia, Canadian governments too have recognized the need for IFS in various post-wildfire reports (Nicolakis and Roberts 2022). IFS is largely being reactivated in more rural and remote areas, and primarily on Indigenous land tenures (Nicolakis et al. 2020; Nicolakis and Ross 2022). There are also considerable regulatory, technical, cultural, and fiscal barriers that are preventing its reactivation on landscapes (Hoffman et al. 2022; Lewis et al. 2018). The government of British Columbia recognizes that “cultural burning” is distinct from prescribed burning; however, it has not yet co-developed a policy framework for cultural burning in line with the United Nations Declaration on the Rights of Indigenous Peoples (Government of British Columbia 2024).

### Managing value conflict: how bureaucracies interact with IFS

Bureaucracies, as “rational” decision-making institutions, are efficient at tackling problems at scale, but they are also conservative and rigid, focused on preserving the status quo (path-dependence) rather than learning and innovating (Pierson 2000). Meijer and Jong (2020) conceptualized three strategies along a spectrum that bureaucracies will employ when confronted with disruptive and conflicting values. On one end is *avoidance* where bureaucracies ignore the conflicting values (and

those that hold them); in the middle are *coping strategies*, which are applied when bureaucracies must engage with the conflicting values (and those that hold them) but are reluctant to accommodate them and change; and at the other end are *learning* strategies, where bureaucracies embrace change and accommodate different values into policy.

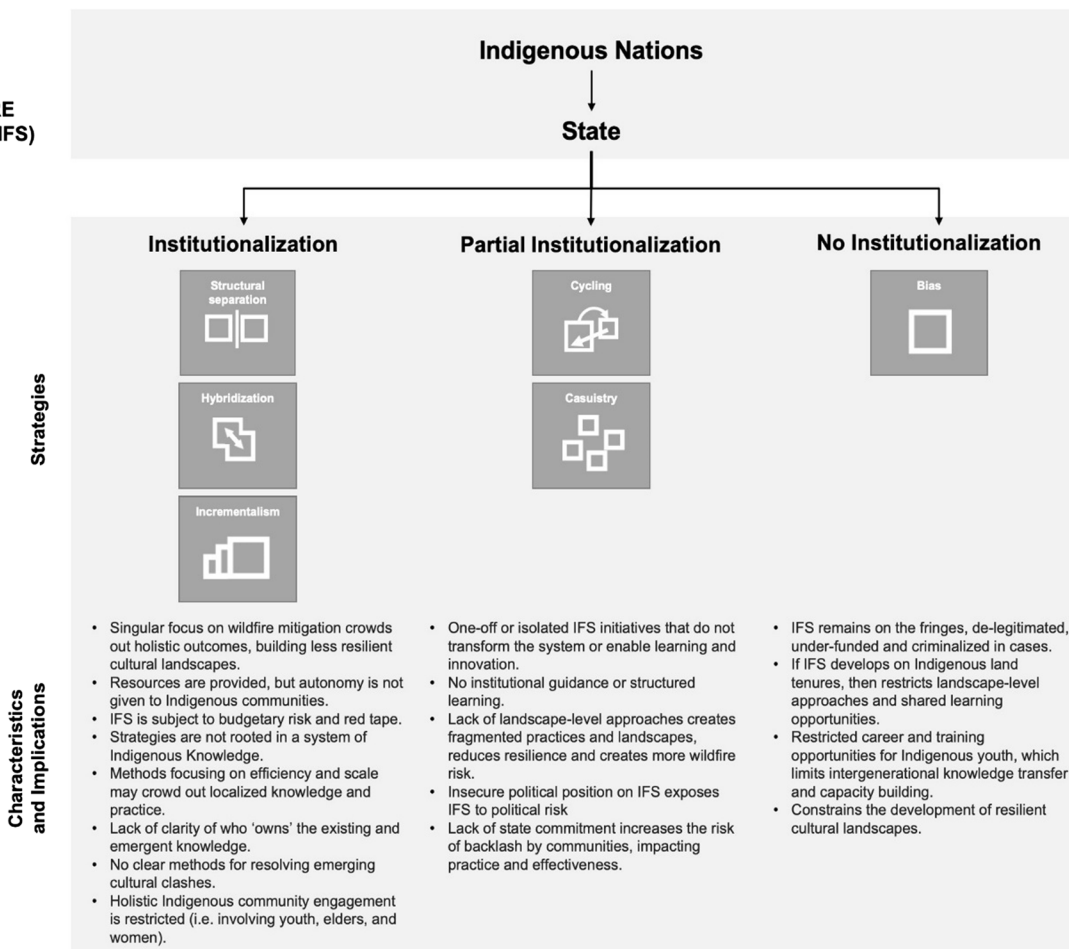
Figure 1 demonstrates how these strategies interact with IFS. Point (A), for generations (in some cases), IFS has largely been excluded from landscapes, even criminalized (*avoidance*). Governments without any legal requirements to engage with IFS have typically avoided or ignored claims by Indigenous Peoples to support the implementation of IFS. (B) Recent wildfires, combined with scholarly research and advocacy supporting Indigenous People’s rights to lands and self-governance, have motivated engagement between the state and Indigenous Peoples on IFS (such as British Columbia’s draft cultural burning policy). *Learning*, which involves the state listening to Indigenous Peoples and integrating their knowledge, is most acute post-wildfire. However, as public attention shifts to other issues, this interaction shifts towards either *avoidance* or *coping strategies* to slow disruptive change. (C) These *coping strategies* may accommodate IFS or not (the *bias* coping strategy, for example, avoids IFS through exclusionary tactics). But the coping strategies give the state a repertoire of strategies to deliberately engage with Indigenous Peoples on IFS without ceding power or disrupting the status quo. We note that, through engaging in coping strategies, or a “zone of interaction,” the state and Indigenous Peoples may

Footnote 3 (continued)

“cultural fire credits” are pushing back against a narrow focus on generating carbon credits, to reflect a culture of care for landscapes (Jackson et al. 2017).

**ZONE OF INTERACTION REGARDING INDIGENOUS FIRE STEWARDSHIP (IFS)**

**STRATEGIES EMPLOYED BY THE STATE**



**Fig. 2** The effect of coping strategies on IFS, and the implications for Indigenous Peoples and landscapes

be “learning” together. However, this may only be at an individual rather than an institutional level if structured processes are not in place to mobilize knowledge (in its different forms).

**Coping strategies, their characteristics, and implications for IFS**

Thatcher and Rein documented that policy actors draw from a “repertoire of alternative strategies,” or *coping strategies*, to manage or mitigate change (2004: 458). They identified three *coping strategies*: (1) actors give preference to the new conflicting value in the next policy cycle, and then revert back to the original value in the following policy cycle (*cycling*); (2) they assign the new value to a specific department or agency, effectively quarantining the value from other institutions and values (*structural separation*); or (3) the new value is accommodated into parts of the policy system on a case-by-case basis (or one-off cases), without any institutional guidance (*casuistry*).

Stewart (2006) added (4) *incrementalism*, or adopting the conflicting value into the policy system through small changes; (5) grafting the new values onto existing values within departments (*hybridization*); and (6) excluding the conflicting values through the “rules of the game” (*bias*). All but the *bias* strategy suggest some form of institutionalization into the system (see Fig. 2).

The use of these coping strategies means that policy change is complex and unpredictable, and competing values are not always institutionalized. Even where conflicting values are institutionalized, there are implications for how these values are reconciled, accommodated, and translated. For IFS, this has practical importance, with implications for people and landscapes (Fig. 2).

Figure 2 illustrates that in the “zone of interaction,” where the state and Indigenous Peoples engage around IFS, there are three sets of general pathways from the six *coping strategies*: (1) *Institutionalization*; (2) *Partial Institutionalization*; and (3) *No Institutionalization*.



For (1) *Institutionalization*, the three coping strategies of *structural separation*, *hybridization*, and *incrementalism* lead to an accommodation of IFS in the state's institutional framework, though in different ways. For *structural separation*, Thatcher and Rein (2004) argued that putting a value-set, like IFS, into a single agency can create the agency focus, expertise and institutional learning that is essential for implementation. However, this “also produces stresses and tensions elsewhere in the system” (Stewart 2006: 187). For example, coordinating a holistic IFS with other departments responsible for forestry, mining, energy, or agriculture would be complex given the institutional silos this creates. Any advances made to accommodate IFS may be undermined by other departments and policies that work in self-defeating ways, such as the continued planting of monoculture forests in high-risk wildfire areas.<sup>4</sup>

*Hybridization* involves grafting external (and often conflicting) values, like IFS, onto existing values within an agency. The existing values within the agency may be transformed through this process, or they may be resistant to change, meaning the new values conflict and are ignored, or are subsumed into the existing (and dominant) values (Long et al. 2021). *Hybridizing* IFS into a wildfire agency offers promise for bringing IFS to scale. However, there are challenges in trying to retro-fit IFS into a policy system that is geared towards reactive approaches like fire suppression and solving the “wildfire problem” through technological fixes (Eriksen and Hankins 2014). There are also mismatches in governance, with the state relying on command-and-control style structures developed for disaster and fire suppression, as opposed to the highly localized and intergenerational approach of IFS; the agency red-tape for applying fire to the land; the reliance of crews from elsewhere in the state; and the incentives geared towards suppression as opposed to protection and restoration. There will be conflicts and assimilative pressures, and power differences must be acknowledged and deconstructed to support the growth of IFS and Indigenous perspectives within agencies.

Even in funding agreements, it is important to be mindful of power relations and their effect on IFS. For example, Australian and Canadian governments are financially supporting Indigenous environmental stewardship, through Rangers and Guardians programs initiatives

(Reed et al. 2021). While there has only been one government funded IFS program through the Guardians initiative in Canada over the last 5 years, there have been many supported across Australia. In their case study in northern Australia, Fache and Moizo (2015) observed that government funding did reconfigure power relations in relation to IFS within the community. They argued that outside funding created different motives for burning, often driven by external actors who provide technical support. Traditional fire practitioners were often excluded from planning and implementation of burns. The practical effect was that there was either too much burning at the wrong time of year, or too little at the right time, impacting medicines, food plants, and hunting opportunities.

*Incrementalism* is useful where values are polarized (Hayes 2017), there is limited information, or complexity makes small changes appropriate (Lindblom 1959; Howlett and Cashore 2009). Whether incremental steps lead to more transformative changes is another question. Sustained incrementalism could offer a pathway forward for IFS through a structured change process, with clear goals and leadership (Crosby et al. 2017). However, there is political risk where successive governments may be less open to IFS and may even rollback any changes made to support IFS. Thus, embedding IFS in statute is likely important for sustained outcomes over time and across successive governments (this has not occurred as of writing). Meijer and Jong (2020) documented that endless deliberations can make tensions more acute between different value-holders; they suggested that practical experimentation is key to managing value conflict, with learnings mobilized within organizations to carry change forward.

As Fig. 2 demonstrates, *institutionalization* of IFS could mean it becomes too focused on wildfire mitigation at the expense of other holistic outcomes, which creates “blunt” stewardship and leads to less resilient landscapes; it may also crowd out Indigenous ownership of IFS and the development of Indigenous knowledge. There are ethical and practical challenges in bringing IFS into a “Western” organization that is not rooted in Indigenous ontologies and epistemologies. How is IFS and Indigenous knowledge treated, and where there are clashes with western science, how are these resolved? Who owns the emergent knowledge that is generated through practice? Bringing IFS into a government agency may provide secure resources, but then it becomes subject to red tape and budgetary risk (Smith et al. 2021). There are also questions around whether the agency and its culture will accommodate Indigenous Peoples from a whole community perspective, including elders, youth, and women,

<sup>4</sup> To address silos, the province of British Columbia released a draft Biodiversity and Ecosystem Health Framework in 2023. A key action is to develop an Office of Biodiversity and Ecosystem Health to coordinate policy across the government to achieve ecosystem health goals in partnership with First Nations. See Ministry of Water, Land and Resource Stewardship, at [https://www2.gov.bc.ca/assets/gov/environment/biodiversity-habitat-management/draft\\_biodiversity\\_and\\_ecosystem\\_health\\_framework.pdf](https://www2.gov.bc.ca/assets/gov/environment/biodiversity-habitat-management/draft_biodiversity_and_ecosystem_health_framework.pdf).

which is key for intergenerational knowledge transfer and community wellbeing (see Nikolakis et al. 2023).

(2) *Partial institutionalization*: in south-eastern Australia, Smith et al. (2021) documented a fluid and relational quality to the institutionalization of IFS, where there is no formal institutional guidance for its implementation. This situation reflects the coping strategy of *casuistry*. In such contexts, IFS occurs in one-off (if not isolated) situations, and is typically uncoordinated and lacks broad awareness and support within wildfire agencies. An example of this is the Yunesit'in fire stewardship initiative in central British Columbia (Nikolakis and Ross 2022) and Long et al. (2021) observe this in California as well. It is important to note that “casuistry does not always imply incrementalism” and the full integration of IFS into and across the institutional framework (Stewart 2006: 189). *Casuistry* often “gatekeeps” values that conflict with those of the bureaucracy, like IFS does, and mediates policy change through a seemingly neutral and technical process. IFS collaborations typically occur in specific sites or regions, based on the context and factors such as the existence of Indigenous knowledge and stewardship capacity, property rights, and the personal relationships between Indigenous Peoples and agency staff.

IFS does represent a Pandora's Box for state bureaucracies and their wildfire agencies. IFS is laden with questions of colonialism, power, sovereignty, and land back issues. A *casuistry* strategy skirts these issues and allows IFS to be implemented, enabling collaboration, experimentation, and learning by doing (see Berkes 2009). However, there are also weaknesses with *casuistry*, such as these initiatives being unsupported within the institution and learnings not being shared across the wildfire agency. There is also typically an over-reliance on specific staff with the right interpersonal skills to bridge cultures and build trust, and retaining such staff, who are then embedded in a conservative bureaucracy that is rigid and skeptical, is noted as challenging (Smith et al. 2021).

Bureaucracies may *cycle* through different values in a process of *flip-flops* and *backlashes*. *Flip-flops* involve reversals in policy, when values and judgments shift dramatically (Posner and Sunstein 2016). *Backlashes* result from situations where certain values become unacceptable and lose their champions, pushing policy in alternative directions (Stewart 2006). There has been some space created for IFS resulting from a *backlash* against reactive suppression-focused policies. Public inquiries post-wildfire, like the Abbott and Chapman (2018) report in British Columbia, and the Bushfires Royal Commission in Victoria (2009), and New South Wales (2020), have called for more decentralized wildfire governance (running counter to the observation by Galaz et al. 2008 that post-crisis the pressures are for more centralized

governance). These post-wildfire reports and inquiries have also called for a greater involvement of First Nations in wildfire governance and more IFS to mitigate wildfire risk as a fuel reduction strategy (see Nikolakis and Roberts 2022 on the Abbott and Chapman report in British Columbia, and RCNNDA 2020 in Australia). However, there has been little progress on implementing these recommendations, like decentralization and more IFS, which is common for post-disaster inquiries where the focus is on identifying problems rather than on learning and implementing change around a complex phenomenon (Elliott and McGuinness 2002; Eburn and Dovers 2015). Without a secure place in the institutional framework, such as through an institution-wide commitment and reflected in statute, IFS remains vulnerable to political risk and withdrawal, such as *backlash* from smoke emissions or escapement (Attiwill and Adams 2013).

As Fig. 2 illustrates, *partial institutionalization* means that only one-off or isolated IFS initiatives are supported. Without structured learning, or a political commitment to consistent implementation, these small and fragmented IFS initiatives neither build knowledge or capacity, nor do these support wildfire resilient landscapes and communities. IFS, under these *partial institutionalization* strategies, remains insecure in the system and exposed to political risk, such as policy *backlash* or *flip-flops*.

(3) *No institutionalization*: bureaucracies can avoid engaging with and accommodating IFS through the *bias* strategy. IFS can be discredited and ignored through “rules of the game” that determine what ideas and values are heard, those that are acceptable, and those that are not (Stewart 2006). If you do not “know the rules” or “speak the language,” you simply cannot enter the conversation for policy change. According to Smith et al. (2021), there is skepticism about Indigenous fire knowledge among some non-Indigenous fire practitioners, driven in part by a lack of empirical evidence. A gap exists between the technology-focused “firefighting” culture and the grounded, land-based perspectives of IFS (Eriksen and Hankins 2014). Underlying these distinct cultures are different mental models, heuristics, and judgments on a theory of change for wildfire risk (McLennan and Handmer 2012). In western mindsets, the causes of wildfire can include a changing climate or acts of God, but there is a growing recognition that this is driven by poor wildfire management, such as a lack of fuel management strategies (Eburn and Dovers 2015). Indigenous perspectives have an ethic of care for building wildfire resilient landscapes (Steffensen 2020; Nikolakis and Roberts 2020).

*Bias* has practical implications. In more populated regions, IFS must negotiate a “vast and conservative multi-million-dollar risk management infrastructure”

for wildfire management (Smith et al. 2021: 87). Technical processes are often used to determine whether IFS should proceed: these include the development of “burn plans” or prescriptions that set out where and when fire can be applied to landscapes. The Yunesit’in IFS program in central British Columbia had to steer their burn plan through five layers of government, which took more than a year for approval, and thus imposed significant costs and delays. “Burn plans” in British Columbia, for example, are often led and developed by non-Indigenous Peoples trained in western science, as are the “burn bosses” responsible for implementing burn plans (Dickson-Hoyle and John 2021). A similar situation was observed by Williamson in Australia’s south east, “Rarely, if ever, do Aboriginal groups conduct cultural burning activities or participate in programs and partnerships on their own terms” (2022: 3). As it stands, there is no accreditation process that recognizes IFS knowledge and practices in Australian and Canadian jurisdictions, and IFS practitioners are unlikely to have liability insurance, which further constrains this practice on landscapes (Hoffman et al. 2022).

*No institutionalization* means that IFS remains on the fringes of practice, often only being applied on remote landscapes on Indigenous land tenures. The lack of institutional support and resources means there are few opportunities for Indigenous Peoples (such as youth) to build careers in IFS, and for Indigenous fire knowledge to be transferred through practice, meaning IFS becomes vulnerable.

### Looking forward: a parallel Indigenous-led approach to IFS

This paper conceptualizes three general strategies used by the state when engaging with IFS: *avoidance*, *coping strategies*, and *learning*. Figure 1 details how post-wildfire there is an “affective” shift towards more proactive management alternatives, like IFS, which can re-orient the state’s approach from *avoidance* to *learning*. After public attention shifts to other issues, the state may revert back to *avoidance*, or where it is required to engage with Indigenous Peoples, often applies *coping strategies* to carefully consider how IFS may be accommodated (or not) into the wildfire governance system. Drawing on the Australian and Canadian context, where the state is actively seeking to reconcile their laws with those of Indigenous Peoples, we examine how six pragmatic *coping strategies* shape IFS in practice.

Figure 2 illustrates how the coping strategies create three pathways for IFS: *institutionalization*, *partial institutionalization*, and *no institutionalization*. *Institutionalization*, or accommodating IFS into the dominant policy system, is enabled through (1) a *structural separation*,

creating a single agency to accommodate IFS, bringing focus and resources but at the same time potentially creating silos and rigidity, which runs counter to the more decentralized and land-based ethic of IFS. (2) *Hybridization* grafts IFS onto existing wildfire agency values and practices, such as the recruitment of First Nations Bushfire Safety Officers in Queensland,<sup>5</sup> which may offer promise for learning and integrating knowledge systems to tackle the complex wildfire problem but raise practical and ethical challenges when interpreting and applying Indigenous knowledge in a conservative cultural context. Power differences mean cooption is a real likelihood, and that IFS is simply conflated with prescribed burning. Indigenous Peoples and their knowledge will be alienated from agency-led “practices” that are designed to be IFS, but are neither Indigenous-led nor rooted in Indigenous law. (3) *Incrementalism*, meaning small changes in the system, are necessary given IFS is being revitalized across landscapes with regulatory capacity, resource safety, and land-tenure challenges. However, without clear policy guidance, or leadership, IFS under an incremental approach remains vulnerable to changes in government. Legislative support may be an appropriate, though not absolute, safeguard.

It is important to note that while *institutionalization* into the bureaucracy may offer security for IFS, it also means that Indigenous Peoples will likely yield some of their autonomy around the development of IFS. As Nadasdy observed in northern Canada, “bureaucratization... has had a number of far-reaching effects. Most significantly, many First Nations people now have to spend their days in the office using computers.... This necessarily takes them off the land and prevents them from engaging in many of the activities that they continue to see as vital to their way of life” (2003: 2). It also means that by participating in the “governments’ bureaucratic approach... First Nations peoples also tacitly accept the assumptions about the nature of land and animals that underlie the rules and functions of that bureaucracy” (Nadasdy 2003: 8). There is also the risk of bringing IFS into the “fickle budgetary environments” within governments (Smith 2021: 91), where programs are sometimes funded for a short time and then terminated.

Under a *partial institutionalization* pathway, IFS is not fully accommodated in the policy, and there is often no institutional guidance or learning. The *coping strategy* of (4) *casuistry* is commonly applied to IFS, where it is considered and implemented on a case-by-case basis, rather than through general rules or legislative changes. While

<sup>5</sup> See Queensland Fire and Emergency Service, Operation Cool Burn, Response magazine, August 2021 [https://www.qfes.qld.gov.au/sites/default/files/2021-08/Response%20Magazine\\_%2038\\_August\\_LR.pdf](https://www.qfes.qld.gov.au/sites/default/files/2021-08/Response%20Magazine_%2038_August_LR.pdf).



this does allow for experimentation with IFS in parts of the system (or regions), there is seldom any organizational learning, leading to isolated and one-off initiatives. This means the status quo is often protected. (5) *Cycling*: IFS is given most attention post-wildfire, when public backlash to the dominant policy is most acute. Bureaucracies are driven by “affective” motivations to consider alternatives, like IFS (Beggs and Dalley 2023). Then, public and state attention moves elsewhere, and IFS commitments “drop off the table.” This oscillation means no meaningful progress is made on IFS across the system. While *casuistry* does allow for experimentation and “brightspots” to emerge,<sup>6</sup> without structured learning and support these will not catalyze systemic change.

The third pathway is *no institutionalization*, comprising (6) *Bias*. IFS may be excluded from landscapes through highly technical processes, and downplayed in wildfire debates by technological solutions. The dominant wildfire culture is one of a “war against fire” (Eriksen and Hankins 2014), and IFS must negotiate this “discriminatory and racialized context,” where there is skepticism around the legitimacy, safety, and authenticity of IFS, and Indigenous fire knowledge more broadly (Smith et al. 2021: 85). Deconstructing this bias and heuristic through structured learning processes is an important step for creating a space for IFS to develop. However, while IFS remains on the fringes, such learning processes will be fragmented.

### A parallel Indigenous-led approach

The “Gordian knot” of how to *institutionalize* IFS within mainstream agencies may be “cut through” by the fact that IFS does not need to be *institutionalized* in these agencies at all. IFS exists, and likely in a more robust way within Indigenous laws and governance, where it is insulated from mainstream political risk. Under this approach, it is Indigenous Peoples themselves that determine who is responsible for IFS (and why), and establishing the rules for where, when, and how fire is proactively used on the land. Indigenous Peoples establish the responsibilities and accountability mechanisms for IFS in ways legitimate to their collective. For example, the Esket’mc in central British Columbia have a Council of Matriarchs who select a “Fire Keeper,” according to certain qualities, and this Fire Keeper determines where and when IFS is applied to landscapes. While in Australia, First Nations have laws that guide IFS, with First Nations continuously applying fire on various tenures and for different goals, across the north and the south of the country (Yibarbuk et al. 2001; Weir et al. 2021).

However, for many Indigenous Peoples in Australia and Canada, they cannot apply IFS freely, and there may be limited knowledge and confidence in applying fire to the land (Lake and Christianson 2020). There is an important role for bridging organizations (Berkes 2009) like the Firesticks Alliance in Australia, which acts as catalysts to support the revitalization of IFS. Firesticks, an Indigenous-led non-profit, is invited by First Nations to support the re-activation of IFS on landscapes. Firesticks has a mentoring program in place for Indigenous fire practitioners, where they can develop into lead fire practitioner roles. Firesticks works with various First Nations such as Djabugay, Tagalaka, and Kuku Thaypan in northern Queensland, the Wakka Wakka in southern Queensland, and the Darug in southern New South Wales (among others). These IFS programs apply fire to Indigenous land, pastoral leases, national parks, and private and other land tenures. There are other bridging organizations that support IFS programs, such as the Indigenous Desert Alliance and the North Australian Indigenous Land and Sea Management Alliance (NAILSMA).

A similar situation exists in Canada, where IFS was restricted in many parts and continues to be constrained (Lewis et al. 2018). Again, the role of bridging organizations has been helpful to catalyzing IFS. For example, the Yunesit’in Fire Stewardship (YFS) program, established after the catastrophic 2017 wildfires in the Chilcotin region of central British Columbia, and guided by Indigenous laws and governance (see Nikolakis et al. 2020), is supported by Gathering Voices Society and the Firesticks Alliance (see Nikolakis and Ross 2022). These partnerships are distinct from those with wildfire agencies in that these support the practical implementation of Indigenous-led fire stewardship, and involve mentorship, capacity building, and information sharing between the partner and the First Nation. These partners often support First Nations in negotiating the regulatory space for IFS, so that fire can be applied regularly to the landscape.

There is scope for partnerships between First Nations and wildfire agencies, with the two parallel systems evolving together through a “learning by doing” approach (Weir 2023). As an Indigenous fire practitioner from Australia related:

*“When we first started, our fires were illegal fires because they wouldn’t let us do it... But nowadays, it’s not about that. It really is about just supporting each other, and learning together, and trying to make it [IFS] happen without any trouble and conflict.” (Anonymous, Indigenous fire practitioner, personal communication, 2023)*

In addition to coordinating the more proactive approach of IFS with the state’s suppression-infrastructure and

<sup>6</sup> See, for example, [www.firesticks.com.au](http://www.firesticks.com.au) and [www.gatheringvoices.com](http://www.gatheringvoices.com).

expertise, there may also be technical partnership opportunities between wildfire agencies and First Nations, such as the use of remote sensing, LiDAR, machine learning, and other approaches to support IFS planning and practice (Nicolakis et al. 2022a, b). These partnerships could also support agency-learning from Indigenous knowledge, not only in mitigating wildfire, but Indigenous care ethics could inform wildfire response (McGee et al. 2019; Stacey et al. 2019) and in the recovery of landscapes and communities post-wildfire (Christianson 2014; Montesanti et al. 2021; Quinn et al. 2022; Robinson et al. 2023).

## Conclusions

In settler-colonial contexts, the development of IFS is highly contested, despite the practice being identified as an alternative to the reactive wildfire management paradigm. Drawing from Australia and Canada, this paper examines the “zone of interaction” between IFS and the state, and illuminates the patterns of engagement and the implications for IFS. We first show (Fig. 1) that the state has three general strategies for dealing with IFS: *avoidance* (ignoring IFS), *coping strategies* (carefully considering and sometimes accommodating IFS), and *learning* (embracing and accommodating IFS into the dominant system). We document that post-wildfire, there are affective drivers that move the state’s approach from *avoidance* to *learning*; however, over time, as public attention shifts away from wildfire management alternatives, the strategy moves back to either *avoidance* or *coping strategies*. *Coping strategies* offers bureaucracies some pragmatic ways for engaging with IFS, particularly where there are legal duties to consider IFS (and Indigenous People’s rights), but IFS cannot be fully implemented because of institutional, tenure, or jurisdictional issues (among other constraints). This may be where Indigenous land tenure is limited or where Indigenous tenures are close to high population areas, making the implementation and the coordination of IFS with stated approaches more challenging. These land tenure issues are common in the high population and fire-prone regions of southern Australia, southern Canada, as well as in other contexts like California.

Figure 2 documents the six *coping strategies* available to bureaucracies in dealing with IFS, which *institutionalize*, *partially institutionalize*, or do *not institutionalize* IFS. Three coping strategies lead to an *institutionalization* of IFS: a *structural separation* (placing IFS into a single agency), *hybridization* (grafting IFS into a wildfire agency), and *incrementalism* (slowly adopting IFS over time). Each of these have different consequences, but it is important to note that while *institutionalization* may offer security for IFS, there is a risk that Indigenous Peoples may lose autonomy over the program as it is

“bureaucratized”—and potentially alienate Indigenous Peoples, their worldviews and knowledge. There is also a budgetary risk.

A *partial institutionalization* of IFS occurs from *casuistry* and *cycling* strategies. *Casuistry* involves one-off or isolated IFS initiatives in regions that are relationship-led, and without any institutional guidance. We note that the *casuistry* approach is most the common *coping strategy* in parts of Australia and British Columbia (Canada). While this does support experimentation and piloting of IFS programs in highly circumscribed settings, learnings are seldom mobilized, meaning there is little scope for change. *Partial institutionalization* means there is little institutional support for (or even awareness of) IFS, and approaches are fragmented and uncoordinated.

*Bias* is a *coping strategy* that leads to *no institutionalization*. *Bias* delegitimizes IFS and relegates it to the fringes of landscapes, where it is often framed as illegal or unsafe. There is no knowledge building or learning under this *bias coping strategy*.

Our call is to look beyond the *institutionalization* of IFS within the state bureaucracy, and to nest IFS within Indigenous laws and governance—an Indigenous-led IFS approach that operates in parallel to the state. Learning from the Firesticks Alliance and its partners in Australia, IFS programs within First Nations are led by full-time Indigenous fire practitioners, rooted in Indigenous knowledge. These IFS practitioners are negotiating land access agreements with national parks and private landholders to expand the scope of IFS in their regions. Through practice, the Firesticks Alliance is supporting Indigenous ownership over, and general public awareness around IFS.

New structures of engagement must be designed for this parallel space, where Indigenous laws and governance can function independently from the state—grounded in the principles of respect, free prior and informed consent (FPIC), and with an explicit focus on deconstructing power differences (Nicolakis and Hotte 2021; Weir 2023). In this space, there can be attention on the mistaken and unexamined assumptions in wildfire governance that has important consequences for people and landscapes. In this space, it may be possible to create new forms of collaboration and to stimulate novel forms of knowledge in what Neale et al. (2019) described as open-ended “decolonizing processes” of walking together for change.

There must be some difficult yet timely conversations about sovereignty and the “*land back*” process, and as the Firesticks Alliance shows, innovative arrangements can be developed for land access. There may also be opportunities in Australia, Canada, the western United States (particularly California), Brazil, and southern Africa for

IFS to be applied in Tribal Parks or Indigenous Protected and Conserved Areas (IPCAs). As growing evidence shows, Indigenous land tenures and stewardship are critical for climate action and biodiversity, and the Tribal Parks and IPCAs may be a critical part of conservation efforts, with IFS a key tool in stewardship.

Further research will likely span multiple disciplines, reflecting the holistic and interdisciplinary nature of IFS. We note two important streams of research. The first is around governance and policy, where future analysis could explore new forms of governance that enable an independent IFS to flourish in parallel to the state, and the creation of policy environments that can mediate between conflicting values and coordinate them in a seamless way. These questions go beyond co-governance literature and consider a more coordinated governance to reconcile Indigenous and western worldviews and laws. The second is the negotiation between science and IFS, and processes to equalize power asymmetry, weave these knowledge systems together, and appropriate knowledge translation and mobilization tools to support change.

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