Burning Banff

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There are five of us, plus three pack horses, and we are strung along a trail that threads into Banff National Park. Banff is to the Rocky Mountains what the Grand Canyon is to the Colorado Plateau. A packtrip through its knotted peaks is the equivalent of a float trip down the Colorado River. We enter the park along the Red Deer River in the northeast.

Its critics dismiss Banff as a trash park-savaged by transcontinental highways and a railroad, the Bow Valley in particular deflowered by golf courses, ski resorts, swarms of tourists, a hydropower dam, its landscape degraded beyond redemption. In the mid-1990s Banff was even threatened with delisting as a World Heritage Site. Its defenders, however, note that the park has preserved nearly all its biotic pieces and holds intact its majestic matrix of streams, forests, storms, and slashing peaks. It yet retains its grizzlies, wolves, mountain lions; its elk, moose, bighorn sheep, mountain goats; a monumental megafauna to match its monumental scenery. Most spectacularly, nearly alone among Canadian parks, and rarely for North America, Banff has nurtured a habitat for free-burning fire.

A pack trip is thus a traverse through some of the most interesting fire management in North America. Banff is Canada's first national park; a century later it had become for Parks Canada the flagship for an aggressive policy of ecological integrity for which free-burning fire was the vital spark. Ecological integrity aims to keep all the parts and processes of a biota and to grant them a suitable structure so that they can maintain themselves indefinitely. It contrasts with other preservationist philosophies by ignoring such standards as naturalness, wilderness, or historical authenticity, which may or may not contribute to the perpetuation of species and how they live. A policy such as Banff's is, as postmodernists like to mutter, a contested matter.

All the themes are here: Banff is where they arose and where the relevant ideas took to the field to decide the issue. That makes Banff typical, or prototypical.

What makes it special is that ecological integrity can apply to any landscape; at Banff it applies to an extraordinary menagerie of big animals and the habitats that sustain them. Fire matters because fire seems to be essential to those habitats. Ecological integrity may only succeed if Banff burns. The trick is to see that it burns properly. And that is the purpose for this curious expedition, an intellectual inspection.

A pack trip seems a particularly suitable venue because the infrastructure for packing, along with its craft, parallels that for fire. The same backcountry requirements for cabins, trails, and routines can serve both purposes. A horse broken to saddle and pack is not unlike a controlled fire. A program of burning will demand the kind of commitment, and tradition, and practical skills, that keep horses on the trail. Wardens likely to expend an annual holiday venturing through the backcountry; throwing diamond hitches, hefting panniers, and chasing escaped mares through a dewy meadow, may be precisely those personalities most likely to pursue flame with tenacity, verve, self-mocking humor, care for craft, and granite-faced boldness. This particular party includes the two men most responsible for overseeing Banff's fire program and Parks Canada's chief scientist. Whatever else they see, they will find evidence of fire or its glaring absence to all sides, and whatever else they may discuss, they will always talk fire.

The trail passes a sign announcing the park boundary. Beyond it, for miles along the valley of the Red Deer, the forest has burned.

It has taken us a day to reach that border. The distance to the boundary is not great, but the effort is a long day of preparations; waiting, scouting, sorting, gathering and testing tackle, picking horses. We rode for only a few hours up the narrowing Red Deer to Barton's Camp, a private outfitter's resort, near the border.

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A pack trip is not a casual enterprise, and Banff's tradition of backcountry horse patrols demands an elaborate infrastructure of trails, stock, lore, and cabins. Such patrols were the means by which early-day wardens observed for themselves what was happening in the park they oversaw. They watched for poachers, beetle outbreaks, and fires. For a while, the cabins evolved into permanent residences before reverting back to temporary waystations. Throughout, the practice of patrolling endured. On a horse you smelled as well as saw. You felt the land in ways that viewing it through windows of aircraft or

autos did not allow. The patrol was how, in a vast and looming landscape, you made your presence known.

The program persists, if less visibly, amid a modern world of helicopters, snowmobiles, PCs, pickups, and SUVs. Appropriately our journey thus begins somewhat outside the park proper, at Ya Ha Tinda ranch, probably the only east-slope valley along the Rocky Mountains that has not succumbed to suburban and second-home sprawl. The ranch itself sprouted on the old Brewster spread when in 1918 three park wardens built a cabin to support their winter patrols. The ranch proved ideal for raising the horses the park required. Over the next two years the local wardens relocated the house and established a horse-ranching operation that today boasts 200 stock. Yet that facility is only a downpayment. The horses require trails; the trails lead to cabins and corrals; the stock demand feed, whether as imported oats or native pasture; and the warden service must retain a staff for all of this. Packing demands unique equipment, specialty skills, and training--Banff puts its warden recruits through a two-week course in packing and patrolling.

At last we have wrestled horses, panniers, saddles, and riders into some semblance of a packstring fit to ride through the valley of the Red Deer. The trail wends through young pine, along a mix of abandoned roads, animal paths, and surveyed lines for seismic sensors.

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Cliff White leads. He does so not by any rank but by the sheer bustle of his enthusiasm, and that is how he has led the Banff fire program. He had grown up in Banff--knew its marvels and mishaps firsthand, relished its outdoor sports and its wildlife, knew its personalities and politics. After high school, he spent a year at the University of Calgary, then dropped out and spent much of his time skiing, particularly in the U.S. In December, 1974, while in Missoula, he heard a lecture by Bob Mutch, then a researcher with the Intermountains Fire Sciences Lab. The Forest Service was slowly rousing itself into a new era of fire--had, as of two years earlier, experimented with allowing natural fires to burn freely in the White Cap Wilderness. Mutch's ardor proved infectious. Cliff enrolled at the University of Montana and cobbled together a major that combined wildlife with fire. He then headed to Colorado State University, at that time one of the few schools that offered graduate courses in fire, and worked through a master's, a fire history of Banff.

He had his mission; and his timing was impeccable. In 1979, as he returned to Banff with an appointment as a warden, Parks Canada was restating fire policies. While Banff's aboriginal inhabitants had used fire, its park protectors sought to abolish it as environmental wreckage and human intrusion, and to a remarkable degree had succeeded. They had done so with such thoroughness that Banff's once-vaunted fire suppression organization had withered into insignificance, staffed, if at all, by temporaries. Fire management seemed an archaic practice, like branding and blacksmithing a craft of largely antiquarian interest.

But thinking changed. Preservationist philosophy argued for encouraging natural processes like lightning-kindled fire, and ecologists began to tally the ways fire's removal had inflicted its own damages on the land. The argument was not simply that fire suppression had allowed fuels to pile up into conflagration-stoking horrors, that controlled burning was needed to thin out that wild woodpile to make fire protection easier. Rather, the core thesis was that fire belonged biologically, as much as bighorns and marmots. Trying to abolish fire was akin to abolishing snowstorms. It simply made no ecological sense.

So Parks Canada resolved to allow fire to return. That meant Banff needed a dedicated fire program, one that could fight fires the park didn't want and light those it did. What this meant in practice was unclear. Cliff White told them. "Cliffie" sparked Banff's moribund program back to life. By 1983 Banff boasted a first-rate initial attack crew. A year later it was staging its first prescribed burn. Two years later, the park's centennial, Cliff published a historical survey of fire in Banff, a model for assessing fire's place. Parks Canada acknowledged Banff as a national prototype. That founding fire crew became the nucleus for the crack fire command teams that the agency dispatches to major wildfires--bad burns it wants extinguished that required talent beyond what an individual park has in-house. More permanently, the Banff brotherhood dispersed throughout the system. Wherever they landed, they kindled modern fire programs.

When he began, Cliff had little go on, and endless reasons not to bull ahead over the bureaucratic muskeg. The earliest trials, at Two Jack Campground, stirred a firewhirl of controversy. The public didn't like the cutting that had to precede the bums, and they most certainly did not approve of the fires; and had they understood the full outcome, they would have approved even less. The plans called for a severe fall burn. What happened was, the resident lodgepole failed to seed properly, those that survived the fire were hit with pine beetle, the

elk gobbled up the aspen suckers, and the place, against all expectations, came back to spruce. Such circumstances, Cliff learned, called for a fast, hot spring burn. The program moved on.

Year by year, Banff underwent its institutional chrysalis. Cliffie did it with sheer personality; with unbounded zest, a high tolerance for controversy, a remarkable capacity to absorb information and ply it in the field. His impact was less charismatic than catalytic. He is the behavioral incarnation of mixed metaphors. His wiry frame is as restless as a gerbil; ideas fly from him like sparks. He speaks rapidly, in a clipped vernacular. He "talks" in the same way a hummingbird "flies." He bustles from one project to the next, from one idea to another, the way a hungry omnivore might prowl through a landscape. Fire man¬agement, like life, was an experiment that never replicated itself. When he learned that a large burn was succeeding, he famously replied, Well that worked. Let's try something different.

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This is contested land--has been for millennia. Aboriginal Americans fought over the bison that spilled into the Rockies from the plains. Contemporary Canadians quarrel over fires. A gravel road that connects Ya Ha Tinda to Banff proper passes two, one on each side of the park boundary.

The Dogrib Creek fire likely sprang from a hunter's campfire on lands protected by the Alberta Forest Service. It was mid-October, the site was remote and mountainous, so the AFS loose-herded the burn and waited for winter to snuff it out. Instead a chinook wind spilled over the divide, hurled sparks across the valley and propelled the flames like an avalanche into a downslope run that splashed through the foothills. The AFS mobilized for a firefight. They bulldozed one line across the fire's head and watched the flames hurtle over. They bulldozed another, and watched showers of embers skip across. And so it went until, finally, the winds died, the fire calmed, and the AFS staffed up for massive salvage logging, as though intent to punish the forest for daring to defy it.

Over the mountain, starting roughly at the same time, Banff had a fire of its own. This one they had set, nestled in the Bare Range. They ran it into the treeline, letting the steep terrain, rocks, and wind box it into a corner. Then they watched, as across the summit, outside the boundary, a phalanx of feller-bunchers slicked off charred trees like pond scum.

It takes time, and patience, and talent, to ready a packstring. This is our first morning and we must, as a group, learn the drill. Yesterday we managed to load everything from mounds of goods dumped out of trucks and to match horses with riders and pack stock with tackle. Now we must be more precise.

We collect the horses from the corral and slip on halters and lead them to the tack shed where the blankets, saddles, bridles, tarps, ropes, and pack boxes (panniers) are stored. The riding horses get saddled first. Then we place the pack saddles on Rocky, Banjo, and Ziggy. We work in pairs, one man to each side, each hoisting up a matched tack box. The packs must balance. Stray gear in duffle bags goes on top. A tarp covers the lot, and an ineffable diamond hitch seals the tented mound tight. Then we slip bridles onto our horses and direct them to the trail. Cliff White leads, with Steve Woodley and Ian Pengelly behind, each with a halter to a pack animal. Cliff's father, also named Cliff, and I follow.

It is an easy morning's work. The camp is a private facility, and it supplies our cabins, meals, a corral and feed for the stock. It's a morning for the novices to begin their apprenticeship and for the veterans to rekindle their skills. The most experienced among us check cinches and eye the heaped packs and help soothe the nervous stock. Half way through loading Rocky, they decide the packs aren't aligned right, and undo the pack boxes and retie them.

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We cross the park boundary and enter a burned forest. The valley narrows here, before widening again. We ride on the north side of river, trekking across the south-facing slopes, those most easily burned, and which were in fact fired in the autumn of 1994. Planning for that burn had begun seriously in 1991, barely a decade after the park's fire program had been rechartered. It required that Banff's fire crew do something unusual and difficult: it required they refit skills developed for suppressing fires into starting them. Typically, emergency fire crews respond poorly to long-return projects; the turnover of seasonal crews is high, crewmembers suffer from withdrawal of adrenaline rushes, they grumble over routine labor. Not least, their image of themselves must change from crisis firefighters to calculating fire lighters.

Along the Red Deer Valley preparations included collecting weather data, estimating fire behavior from prevailing winds and terrain, and the cutting of a fireguard--a fuelbreak of thinned woods 100-200 meters wide--along the border itself. Cutting, piling, burning: the fireguard took a year to complete. Its purpose was to contain the kindled fire within the desired borders, acting as a

kind of loose fuel-fence. For the actual burn, a system of hoses and pumps drafting from the river was erected to help quench the flames as they approached the prescribed borders. (Before the fire ended, the network of hoses extended over two miles.) A spur ridge on the south side of the river was also ignited, as a kind of fire jetty against future spread. The burn worked more or less as planned and blackened over 1,500 hectares.

It was a bold act. If the fire had bolted beyond the border, it would have devoured outfitting camps, threatened the Ya Ha Tinda, and perhaps provoked Alberta's fire authorities into a ruthless retaliation. Yet it was deemed not merely useful but necessary. Parks Canada policy stipulates that its units burn at least 50% of the acreage known historically to have burned. What appeared extensive was roughly Banff's required annual tithe. But there were other sites less tricky than the steep valley of the Red Deer where one could have satisfied bureaucratic quotas. The Red Deer burn had other purposes.

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The park--specifically, Cliff--would like to reintroduce its vanished bison. The reasoning is both simple and subtle. The bison were once here--the evidence is everywhere. Almost certainly the beasts filtered into, or were driven deeper into, the interior of Banff, and the valley of the Red Deer is an obvious corridor. Heavy snows would then seal them from escape back to the plains, like a fishtrap. With the bison caught inside their mountain corrals, natives could hunt them throughout the winter. Relict bison bones litter the old route like those of oxen along the Oregon Trail.

A bonus to a bison revival, so Cliff reasons, is that they might help "float" a wolf population still rebounding from historic lows. But there is little prospect to herd bison through a Red Deer valley that has become a tangle of conifers, as thick and prickly as rolled barbed wire. It is hard today to imagine the south-facing benchlands as an ancient wildlife corridor for gaggles of shaggy megafauna. To restore such conditions one would have to thin the revanchist woods to the point that they became prairie peninsulas once again. The most direct strategy would be to burn them back to their aboriginal past. Cliff is convinced this is doubly right, because those fresh-burned lands, ripe with prairie-grass proteins, were, in truth, bait exploited by bison-hunters to lure their prey inward.

Eight years later the burn the landscape still bears witness to the burn. Black and silver snags stand like spikes; the forest floor is a coarse weave of fallen

logs and rank grasses, forbs, and shrubs, impervious to erosion. Ian, Steve, and Cliff agree the place is primed for another burn, probably several, because a fire program is not a one-off event. Like backcountry patrols, it's a lore, a commitment, a relationship. Banff's burners must return, just as its packers endlessly revisit the great web of Banff trails.

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For a couple of days we will be joined by two backpackers, one of whom is Mark Heathcott, formerly of the Banff fire program, now on a working holiday from his Calgary post as Western Fire Coordinator for Parks Canada. We round a bend and ford the river and find them electric with excitement, a small fire burning on the trail. Not 15 minutes earlier, Mark blurts out, they saw an elk dash across the trail, followed by a calf, followed by a grizzly in full gallop. The calf swerved, the bear matched it in stride, and they watched it overtake the calf, and with its paw on the fallen head stare at them to see if they wished to contest him for the kill. They didn't.

Banff has what few fire-rival reserves do: a multi-stranded conceptual rope that knots combustion with creatures. Big fires and big animals, that is what justifies the risks and expense of its fire program. Its animals need fire, but it is equally true that its fires need those animals. An abstract argument that fire belongs for reasons of ecological purity has almost no constituency. But if fire is linked to the survival of charismatic creatures, it can rally supporters. They may not like fire as fire, but they will accept it as a necessary shaper of habitat for the animals they wish to preserve.

Theories of nature's economy and how to manage always tack closely to the wind of cultural perceptions. Banff follows what Cliff White calls a predator model of ecology. In this perspective, the big animals do not simply scrape off a surplus crust of biomass: they shape the entire structure of the biota. It's a top-down paradigm, not particularly in academic favor over the past few decades in which bottom-up models have struck a more socially responsive chord. It seemed, instead, that the little folk, the unnamed masses, the silent toilers in field and factory paradoxically determined the fate of nations, and that the proper study of man was not man--certainly not great men--but all the throngs of ethnicities, races, working classes, and genders of humanity's massed spectrum. History's Gaia depended on its unseen human bacteria, algae, and microbes, the "creatures without history."

But the academy's model of the world became increasingly out of sync with political reality. In an era of predatory plutocracy, when a single rogue trader can topple a world bank, when a pack of currency speculators red in tooth and claw can unhinge exchange rates, when carnivorous CEOs can destroy a trillion dollars of stock market value, plunge huge corporations into bankruptcy, and throw the toiling minions into unemployment lines, a predator model seems more plausible. Cliffie believes Banff has ample evidence within its own microcosm. Its big creatures have shaped the world for its small. It needs its megafauna, and those megafauna need fire, the ecological equivalent of Schumpeter's concept of capitalism as creative destruction.

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We cross a bridge that spans a tributary to the Red Deer, a stream deeply entrenched into hard rock. Beyond, the valley opens. Bog birch ripen into an immense meadow, itself surrounded by a wooden fence. We cross through the gate and turn north to Scotch Camp, nestled along the forest fringe.

We unload our stock--the pack animals first, next to the cabin so we don't have to heft the boxes far, and then lead the horses to the corral where we remove their saddles for storage in the tack shed. Our riding horses follow; saddles, bridles, halters. The small corral opens into the grand, fenced meadow. Ian places bells around the necks of Ribbon, Rocky, and Gringo, enough to track the herd, and opens the gate. The horses dash to a small stream for a drink, then prance into the meadow in a clanking cavalcade to feast on the ripe grass. A yearning for oats will draw them back, as a group, come morning.

To the west, Cliff notes, there is a wolf den. We should hear its residents in the evening, and if we are lucky, we might be able to observe them as they hunt. The moon looms high and bright. We hear yaps and howls through the night.

Scotch Camp, like its backcountry cognates, has its code. You leave the place as you found it. Whether you hike, ride, or lead a packstring, you depart with the cabin spanking clean. The only record of your presence should be your entry in the log book.

On entering, we unlock the metal bars across the doors and shutters. We ignite the pilot flame on the gas stove, and toss in kindling for a wood-burning stove nearby. Mostly we use the gas stove to cook; the wood-burner for heating the cabin, warming kettles of water, and disposing of trash. When we leave, we will wash and put away any dishes and utensils; stash sleeping pads and blankets

in their closets; sweep and mop the floor; replenish the kindling; lock up the cabin and bar its windows. The prescription is inflexible. If everyone follows it, the cabin network is self-sustaining. The log book and radio call-ins ensure that everyone knows who has lived up to or failed the code.

All this too takes time. Ian and Cliff wake early and entice the horses back into the small corral with buckets of oats. Cliff, Sr. joins them, as they curry and brush our tiny herd while the rest of us prepare breakfast. After eating, we begin cleaning the cabin and saddling the stock. We load the tack boxes with the horses hitched outside the cabin. The mopping and shuttering conclude. We head into the grand meadows beneath the Mounts White and Tyrrell.

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The grassy lake is fringed with scorched trees and pockets of burned snags. No less than Scotch Camp, the meadow is part of a network, and it requires constant tending. Aboriginal Banff did it with a pragmatic mix of burning, hunting, and bison grazing. When that ended, the valley went to woody seed. For decades, its fiery weeding in particular has been ignored and trees have crowded into it from the mountain flanks.

The new fire program has attempted to revive that unwritten code. It burns to drive back the strangling trees, thin them out, stimulate a richer flora from the meadow. The last big burn occurred in 1996; another, smaller one raged last year, and that is the source of the scorched-killed needles. The grassy cover makes it relatively easy to kindle fires. But the biotic grunge that has accumulated in the eco-corners and under the woody furniture may be more than a fire mopping can remove. It is one thing to clean, another to rehabilitate. For now, the park seems content to reinstate regular burning in the hope that flame will at least hold the scene in check. Scotch Camp is clean because its inhabitants religiously scrub it. The meadow is cluttered because they haven't.

Scotch Camp meadow is not alone. It is part of a larger system of wildlife corridors and grazing grounds. Without regular fire, conifers would close off those corridors like cholesterol plaque pinching off an artery. Probably the park has not burned enough to scour them properly--there is enough fire to hold against the woods, not with enough to drive them back. The narrower valleys like the Red Deer have absorbed harder fire hits, yet still cry out for more.

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Approaching Scotch the day before, we had paused beside Coyote Creek to examine an exclosure, a high metal fence designed to exclude elk. The area had burned in 1994; the exclosure went up two years later. The contrast is absolute. Within, the pen practically chokes on aspen, a meter or two high. Outside, there is nothing, save what, on close inspection, one can find of aspen clones cropped within millimeters of the ground. The burn stimulated aspen growth; the elk ate it back. If Banff wants aspen, and it does, if only for reasons of ecological integrity, it must control its elk. For that it needs a controlling agent. It needs predators.

The predator of choice is the wolf. While the Banff wolves never brushed against extinction, they did plummet in numbers, and they continue to suffer losses every winter as they follow prey outside the park. A few skilled wolfers account for most of the deaths. Getting the wolf numbers up is a means to contain the elk, who have found refuge by clustering around roads and human habitations, where wolves are reluctant to tred. Tweaking the system has proved complicated, although by the numbers it has worked. Wolves are up, elk are down, and aspen sprout profusely following burns.

But the mix is not quite right. The elk still harvest aspen more quickly than can grow to maturity. Ever the optimist, Cliff believes the program has passed its biological Lagrange point, that it is entering an era of virtuous-circle ecology. Ian, who runs the fire program, remains skeptical. He worries that the park is living off the accumulated wealth of favorable habitats stockpiled as a result of large fires in the 19th century. The best habitats, that is, are those that grew up after major burns a century or two earlier. Nothing in recent decades has approached that magnitude of burning. Today's burning may be too little too late. While young fire landscapes are appearing, old ones are dying even faster. The promised revitalization of aspen has not yet arrived.

Paths diverge, our party fissions. Cliff wants to reach Windy Cabin by another, more devious route through lower Panther Valley. With the packstring to care for, Ian prefers the shorter, more direct trail over Snow Creek. The two groups split in the meadow.

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In 1987, having resuscitated the Banff fire program, Cliff White was seconded to Ottawa to help defibrillate Parks Canada's Directive 2.44. That policy reflected some of the best minds in Canadian fire. From the start, policy thinking had diverged from American models. It avoided wilderness, which the Canadians regarded as too culturally ambiguous to guide practical field operations, and it shunned a doctrine of natural regulation, a laissez-faire theory that insisted that administrators needed only stand aside and let nature run its course. Instead, the Canadian Park Service tried to craft a third way, a roughly science-based program that would aim to keep the biota intact and accept human intercession as needed. It looked a bit like corporatist Canada--eager for the trappings of a welfare state yet one that kept the predators intact. The doctrine of ecological integrity received its fire mandate when Cliff compiled a survey of park needs, Keepers of the Flame. Unlike the 1979 directive, the revision would argue for actively setting, not simply tolerating, fire.

The words were easy: the devil was in the doing. Cliff campaigned to get the ideas written into new directives, then to get them approved, and, no less critically, to get them funded. All that happened, much of it through the able bureaucratic hands of Stephen Woodley, who succeeded him in Ottawa, when Cliff returned to Banff as chief for conservation biology. Ask Cliff about his contribution, and he urgently explains that lots of others made critical decisions; the director-general, chief wardens, superintendents. But ask others, Cliffie's friends and foes alike, and they will admit that Cliff White was the indispensable man. He never wearied, he never faltered. Even tinder, well prepared, requires a spark. Cliffie showered sparks. If one trial failed, he would try another. If one succeeded, he might try another as well.

Meanwhile, as Woodley expanded Banff's vision throughout Parks Canada, in Banff itself Ian Pengelly, another of the original Banff brotherhood, had risen to the status of park fire officer. Burning--operational, experimental--continued along proposed wildlife corridors. In 1994 the park oversaw the mammoth Red Deer fire. In 1996 crews burned the valley of Scotch Camp. In 1999 they fired Panther Valley, where Windy Cabin resides.

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We cross over Snow Creek summit amid July snow that turns to sleet and, dropping into Panther Valley, to rain. Near the pass itself we ride through the lodgepole pine progeny of the 1921 fire. The forests of Banff tend to be patchy, grouped into clusters that have resprouted in the ashes of major burns. Ian lets the three pack horses follow the broad trail on their own. They jostle for their rank in line but otherwise trudge along without coercion. The pack animals are fitted with nose nets that prevent them from nibbling at grasses along the way, so they reluctantly stay with the string, knowing what awaits at the corral. They follow their food, as fire does. The sun blasts through the clouds, the weather suddenly warms.

Windy Cabin shines below, white as an iceberg, near the junction of three streams. We ford two of them and begin unpacking while we wait for Cliff and his troupe to arrive. Strewn beneath the porch windows and doors of the cabin are heavy planks studded with upturned nails to discourage prowling grizzlies.

Windy Cabin is a place for regrouping, roughly halfway through our trek. There is good pasture for the horses, a snug cabin from which to explore, a landscape rich with wolves and bears and three years of extensive, deliberate burning. Here craft and place converge.

Good packing is a practiced art. It has its order, its rhythm, its technique. You can't haul a camp in sacks tied to a saddle horn, or hold a load with a granny knot. The horses must be trained to a pack, the packs must be arraigned with balance and lashed with firmness and flexibility, a packer must know when to lead the animal and when to let go. Every horse is different, every trail has its idiosyncrasies. Loads shift, horses spook, accidents happen. A pack trip is an exercise in adaptive management.

Banff uses military pack saddles mounted atop double blankets. The saddle is precisely symmetrical, with double metal hooks on each flank. One pack box goes to each flank. Cliff and Ian work together, across a common saddle, seeking the elusive balance that is the packer's ideal. They begin with a basket loop, each man to wrestle the box on his side. A rope is fixed to one hook and looped around the other with the end allowed to fall to the ground. They pull the rope crossing between the hooks down until it makes a large loop. Then they hoist their box up and hold it with one hand or shoulder while lifting the loop around the outside of the box. Still holding the box they tug the loose end of the rope until the loop tightens, snugging against runners along the box's

sides. They adjust their heights so that the boxes, of equal weight, rise evenly. Then each man pulls the loose end of his rope under the box and toward him and then over and around the cross rope into a large, loopy slip-knot. The slip-knot seems odd: the point, after all, is to hold the pack box securely. But horses bolt, horses stumble, packs strike rocks and branches. If something goes wrong, the boxes must be able to tumble free. A firm slip-knot is the paradoxical ideal. Since we have extra gear in duffle bags, these go cautiously on top. Cliff and Ian raise and lower paired bags gently since Rocky might easily start at sudden spasms of movement and unexpected weights on his back. Then they toss the loose end of their ropes over to each other, running it through each loop and returning it, where it is tied off into another slip-knot.

This much is simple. Next comes a tarp. They estimate the size of the load and trim the tarp to fit. Slowly, with soft words for Rocky, they nudge the tarp over the tied bundles. Again, they balance the canvas, calling to one another whether to pull or release. They tuck in loose ends and flaps, always with slow, deliberate movements. Now comes the lash rope with its wooden hook. Ian drapes the rope over the top of the tarp, running head to tail, and lets the loose end dangle to the ground. The other end, with the hook, he tosses gently over the pack to Cliff, who hands it back under Rocky's belly so it will overlap the saddle cinch. Ian grasps the hook, loops his rope through it and tugs to tighten. Then he tosses the rope over the top to the left of the rope he has just tightened and pulls a loop from that strand under the first. He then passes a second loop through this one, drawing from the rope he first laid out. This double looping creates a crude diamond shape and leaves four strands, two to each of the boxes, one to the front and one to the rear of each. Ian and Cliff now proceed to tighten each strand in a prescribed order. Cliff tugs on the front rope, strings it under the rear of his box and then up the box's front side and back to the top, where it is again pulled. The tugging passes to Ian who does the same on his flank. The upshot is that the diamond hitch on top helps distribute the weight of the boxes equally. Ian ties off the final end with a double slip-knot, taking care to tug upward so that none of the rope loosens or that the strain becomes unbalanced.

Rocky shuffles. As they check their work, each man crossing to the other side, they place their hands on Rocky's rump to let him know where they are. Rocky and Ziggy are widely acknowledged as the "boneheads" of the packstring. Someone at the cabin thoughtlessly tosses some kindling onto the porch. That sharp retort startles Rocky who tugs on his halter. Ian had only loosely looped the halter since the hitching post was not designed for heavy pulling. The halter

breaks free. Rocky jumps away from the cabin. The pack bounces and rolls; but it holds. Ian slowly approaches the nervous horse and reclaims the halter.

We reach the final streams around Windy in good order. Along the trail we watch the packs as they slide and shift. If they move too far off center, then we stop and adjust. A tug on the cinches might be enough, or a retightened diamond hitch. Occasionally there is nothing for it but to repack; not today, however. Beyond the Windy creeks one of the hikers is waiting for us. The water is still high, and she would like to cross on a horse. We ford the streams, and I surrender Ribbon for Ian to take back for the hiker. But after a long day's ride and chaffing from snow and wind, we are slow to secure the packstring first, only removing their nose nets. Rocky, Ziggy, and Banjo wheel about to rejoin the group. Ian shrugs. We have arrived, and if they wish to splash across the streams on their own, it matters little.

On the return trip, however, there is a commotion between the streams. Something has spooked Banjo--or Rocky, free of his net, may have nipped him. Banjo bucks wildly through the bog birch, his boxes and duffles fly free. Probably only 50 yards from the cabin Ian must capture and calm the horse, then patiently reload and tie down every article of tack. He does so steadily, Ian the imperturbable, then leads the string to Windy where we systematically unload and turn the horses out to pasture.

* * *

The Panther Valley pinches almost shut near Windy Cabin. The mountains narrow into an S-shaped pass that segregates two valleys, Lower Panther to the northeast, and Upper Panther, the smaller, to the west. Together they account for the largest acreage from prescribed burning in the park.

Lower Panther burned in 1990. It seemed an ideal setting: the south-facing slopes were extensive, the valley more or less self-contained. A fire was unlikely to escape over the rocky summits to the north or beyond the park boundary. The prescription called for a fall burn when the heavy fuels would be dry and the winds predictably from the west. The fire burned more or less as forecast. The program could shift the next burn to Upper Panther.

Predicting fire behavior is seemingly the most rigorous aspect of fire management because it is the most readily mathematized. Fuels, terrain, weather-all can be analyzed as physical phenomena, quantified, and described by algorithms. In practice, valleys are not wind tunnels; pines, bog birch, and

fescue are not blocks of carbon bullion; and winds do not align around mountains like iron filings about a magnet. The particulars make fire behavior forecasts more art than science. It is a craft, learned from long apprenticeship. The 1990 Panther burn told the Banff fire program that it knew enough to push ahead. The next year, however, a fire at Norquay in the Bow Valley escaped and Banff had to import assistance from Wood Buffalo National Park. The fallout of that blunder included a major review of the Banff fire program. The panel recommended changes but affirmed the fundamental soundness of the scheme and, better, assured the program got a major infusion of money.

They burned, and they learned. They discovered which variables dominated in what seasons and for what fuels. They burned some slopes in the fall, others in the spring. They underburned when the moisture in the canopies was high; they kindled for crown fires when the surface litter and canopies were as parched as kiln-dried lumber. They burned south-facing slopes first because they had the longest windows of opportunity. They ignited some slopes at the top, some at the bottom. They kindled some fires with spot ignitions, like drips of acid on a board. They kindled others in long streamers. They observed that some scree slopes were worthless as firebreaks because the rocks covered wood and organics that carried fire, like a smoking fuse, under the stone and into open forest. They confirmed that mostly the striking topography of the Rockies drove fires upslope, that terrain could override other considerations. Over and over, they relearned the obvious: that it was easier to start a fire than to hold one. They learned that things could easily go wrong, and Ian soon devised the distinction between a zone of ignition and a zone of containment, between what they intended to burn and what, in truth, they did burn and could accept.

The 1999 Upper Panther burn was intended to replicate the 1990 fire. It started well enough; a spring burn on south-facing slopes. But a cold front approached, and the winds poured over the glacial Sawback Range like a chinook. The fire skipped through the stony pass and entered Lower Panther, its forests underlain with snow. To everyone's astonishment, the fire blasted through the needled crowns at 100m/min, as through the lodgepole were prairie grasses. An independent crown fire--one that rushes through the canopy without assistance from surface fires--is a rare event, more theoretical than witnessed, fire behavior's equivalent to gravity waves or neutrinos. Yet the unimaginable had in fact happened. Even so, the fire had held within the park's borders.

* * *

The environs of the Panther Valley are prime grizzly habitat. We see scat on the trail, and the meadows are virtually spaded into gardens by grizzlies digging for yellow hedysarum. Come August they will scour the hillsides for buffalo-berries, their prime food for bulking up to endure winter. While berries and tubers are their principal diet, they will eat whatever they can, and they are belligerently territorial. They'll take elk. They'll fight for carrion. They'll dig out and kill wolves. They'll kill and eat other grizzlies, particularly cubs, caught in traps by radio-collaring researchers. The nail-studded wooden door mats around Windy Cabin are precautions borne of long experience.

Canadian environmental groups have combined grizzlies and old-growth woods into a common slogan, the Great Bear Forest. But they could not prove that at Banff. Virtually all the food-stocks for grizzly come from light-rich landscapes. The critical buffalo-berry, in particular, grows in inverse proportion to canopy closure. The older, the denser the woods, the fewer the shrubs and the sparser the bears. Virtually all the prime grizzly habitats, that is, derive from old burns at various stages of recovery. A fire-excluded park would be a park that excluded bear.

That insight bolstered enthusiasm for the fire program. Burning was not simply about deep-ecology musings over process preservation, or about quarrels with foresters over the value of old-growth. A badly wrought fire program threatened Banff's big animals, and if the park's predator model was correct, any such loss would cascade throughout the biota. The public argument would be fought over what the public considered as charismatic creatures, and in the hierarchy of predators, grizzlies probably trump even wolves. Oddly, elk often graze near wolf dens, which seems suicidal except that wolves appear reluctant to kill near the den because the carrion would attract grizzlies, and the grizzlies would soon discover and attack the den.

We spend the afternoon riding to Upper Panther. We stop at several sites where we measure the year's accretion of grizzly diggings. The association with fire is obvious yet oblique. Without fire the hedysarum would senesce, and without burns the lodgepole and other conifers would entomb the forest floor in a sarcophagus of needles and woody debris. But the route between fire and bear is as tortuous as the trail Cliff navigated around the Lower Panther. The plants have their life histories, the bears have theirs, the fires another. No simple design spans them with a single algorithm. No simple prescription can determine what fires should burn when. The interactions are infinite, rife with

unintended consequences, as when the escaped Panther burn killed one of the radio-collared wolves, an alpha female.

* * *

Another group has joined us in the cabin, which has become crowded. The garbage piles up, too much for the kitchen wood-stove to consume. Cliff gathers up some bags and hauls them to a concrete slab that once served as an outbuilding. He collects some branches and ignites the trash. Others gather round, drawn by the open flames and quiet crackling. We add more wood to keep the fire going even after the garbage is gone.

We have, in fact, burned all along our route. Combustion cleans. At Scotch, Mark spotted a small stack of lodgepole limbs and added to them a wheelbarrow load of chips from where he had been splitting wood. Then he set it on fire. Mark was born outside Calgary, but spent his youth prospecting and fishing in the foothills. His passion for the outdoors came from his father, a petroleum geologist who had been a star athlete in college, but his fire genes he got from his "born burner" of a mother, the product of Mormon farmers and ranchers from Oyen, Alberta. While we talked about how Parks Canada manages fire, he fussed over the slash burn with a garden rake. The parks guys are burners, he explained. That's how he fights fire--that's what makes the Parks Canada fire teams different from the more suppression-dedicated crews in B.C. and Alberta and Ontario. The parks guys will find a good place to kindle a backfire--a fire to counter the approaching wildfire--and when the time comes they will ignite. The others hesitate. They try to attack the fire head-on, or to outflank it with bulldozers and water-bombers. The parks teams will burn. They prefer to fight fire with fire.

Most of them, like himself, like Ian, he notes, came out of the Banff IA crew that Cliff inspired. When Ian arrived in Banff in 1980, after a long apprenticeship at Jasper, Pacific Rim, and Glacier parks, the fire program was on life-support. Cliffie revived it, attracting personalities as tenacious as his own. They learned their craft. Ian stayed of course, but the rest of us, Mark explains, we've scattered through the system. Banff couldn't hold us.

You know, he adds, smiling, that Cliffie once burned down a house. He was about nine and he and a friend were playing with fire around an abandoned cabin near Banff and they managed to lose it and the house became ash.

Things happen around Cliffie. But he's the reason the fire program exists. He's why it worked.

The day starts slowly. After the horses have been gathered from the pasture into the corral, and everyone has sat down for breakfast, Ziggy manages to pry the gate open. The gate is heavy, all of logs, and it took a good effort to hoist the end onto its resting stump. No one bothered to latch the top; it seemed unnecessary. Ziggy, however, works his head under the lower log and lifts and pushes until the gate springs open. The horses have had their oats. They dash back into the pasture. It takes another hour to round them up, even with an additional bribe of oats.

* * *

Our route to Flint's Cabin is a medley of paths, beginning with a fragment of the old road to Flint's Park, then over horse trails, a fire road, another trail, and finally over the gravel road that once joined Banff townsite with Ya Ha Tinda.

That park-spanning road had been completed, engineered and graveled, in 1962, but as Parks Canada redefined its mission from tourism and scenic protection to something approaching a doctrine of ecological integrity, the road became an embarrassment. It was the kind of development the parks should prevent, not promote. In the early 1980s, it closed, largely at the suggestion of the man who would become Stephen Woodley's graduate advisor. By 1985 mitigation measures were in place, although costs were high, intervention had its own unintended consequences, and reform did not instantly happen. The road's sidecuts, culverts, and survey-straight gravel thoroughfare could easily last a century.

There are many routes by which to "manage" nature. Parks Canada had decided to close one, and take another, and Woodley assumed responsibility for planning where and how that new path might go. The options were many, but all would thread around fire. A 1996 study of Banff, in fact, identified fire as the keystone process on which the sustainability of the park might depend. Typically for government agencies fire is what remains after every imaginable constituency has claimed its tithe. Parks Canada, however, made space for flame. Whatever groups might come to the table at Banff, they would find themselves seated around a common fire. It worked because Banff's charismatic creatures needed fire and its fire characters were ready to use it.

We turn into the headwaters of the Cascade River, and then cross over a ridge and dip into Flint's Park. Cliff and Ian, riding lead, spot a mountain goat glaring at them from above the trail. They wave excitedly to the rest of us, the dawdlers, and then watch the goat plunge ahead. Around a bend, not 50 meters away, they spy a wolf, obviously trailing the goat. Further down the trail we come upon a massive-logged goat trap, now decaying. Above us, the mountain slopes, steep and slick as only glaciated valleys can be, sport specks of white. These are small herds of goats and bighorn sheep and even, to Cliff's delight and dismay, elk. These, too, belong in Banff's biotic pantheon, and they, no less than wolves and grizzlies, find their world shaped by fire.

* * *

Trails tend to become passages for fire; our route to Flint's Cabin is no exception. The evidence of the 1936 fires abounds everywhere in the texture of the forest--its even-aged blotches, its stringers, its sentinel snags. At Cuthead Creek the peculiar patchiness of the conifers tells of the 1914 and 1929 fire seasons. Along the Cascade Valley the land still testifies to the 1868 and 1889 complexes. Cliff notes that today's trails all follow routes that appear on the first maps of Banff. All derive from aboriginal trails, which almost certainly coincided with animal paths. All track along south- and west-facing slopes, those that are the warmest and driest, that shed snow the earliest. They are the slopes most readily burned.

The Banff fire program has tried to replicate that heritage, particularly where the valley narrows against the Palliser Range and thickening trees threaten to strangle what should be a major wildlife corridor. The hillsides are pocked with the strips and splotches of prescribed fires, among the earliest big burns the program attempted. They sprayed the slopes with ping-pong-ball incendiaries. The fires, however, skipped and splashed, and proved less devouring than the program expected.

The various paths invite different strategies for moving our pack stock along. Sometimes we pull them on a short lead. Other times, say, picking our way down a steep or rocky path, the lead is loose, the horse allowed to select its footing. When the trail widens along an old road, the stock may be left to fan out. There may be some nipping and shoving among the group to achieve the proper pecking order, but most accept their place in the sequence. Ribbon is notably effective at marshalling. He cuts off Ziggy when Ziggy tries to hustle ahead, and nudges Hillary along when she dawdles. The only incident occurs when Rocky pulls free along a narrow, sloping trail through lodgepole and

dashes up the hill. Ian lets him prance and cavort and when the trail doubles back on the other side of the ridge, we intercept Rocky and reclaim his halter.

* * *

Flint's Camp is a newer-model cabin. After unpacking, Cliff strikes for the peaks where he believes he has spied a wolf chasing rams. Ian and I hike along a decaying trail that leads to the old cabin, near the headwaters of the Cascade River. Ian is unsure why the old cabin was removed. (The newer site, while less remote, has poorer pasture.) Still, keeping with Banff tradition, the cabin was relocated, not abolished.

There are new fires around the meadows across the stream from Flint's Camp, burned in 2001 much as they were around Scotch Camp. The mountains looming behind harbor the scars of many predecessors. In 1936 the largest fire of Banff's biggest-known fire season ripped across its slopes and tore across Cuthead junction into the splayed valleys beyond. Probably the blaze began as an escaped campfire near Badger Pass. A record drought, powerful winds, a large expanse of forest--the fire proved unstoppable. Only the 1940 season came close to approaching it for scale. Since then wildfires have virtually ceased. The only fires of any power are those that the park's fire officers kindle.

Later, Hillary manages to knock apart the small log fence by the stream and fords the waters into Flint's Park itself. The others hesitate; for some reason they are reluctant to sprint wild and free to join her. Stephen spots the breach and we entice Hillary, who seems unsure of what she has done and why, to return to the corral. Cliff and Ian hammer the logs back in place. Later, because the small corral lacks extensive pastures such as those at Scotch and Windy, Ian serves an extra ration of oats.

The trek to Stony Cabin puts us squarely back into Cascade Valley and eventually over the gravel road that once joined Banff townsite with Ya Ha Tinda. We pause for lunch at the historic Elk Trap Meadow, the site of an enormous log structure for corraling elk, now decaying. The park has burned lightly around the structure to protect it from wildfire. Broadcast burning on the mountain slopes commenced in 1986, and was repeated in 1990. In 1992 wolves returned. They promptly slashed the elk population from 250 to perhaps 20-40. Part of the pack has followed the retreating elk into Banff townsite itself. That is where the park's fire program must go, and where we are headed as well.

* * *

All week the weather has been unsettled. We have faced stiff winds and low clouds, snow and drizzle over the passes, blistering sun that burned our hands and necks, then wind, scudding clouds, more dazzling sun, and now the sky boils and threatens a thunderstorm. We get the horses safely pastured at Stony Cabin.

Cliff, Ian, and I hike to a campsite a bit up the valley. The park burned a small side-valley last fall. We search for aspen suckers and elk pellets, and Cliff and Ian recall how, on this same site, a few years previous, a handful of scientists had faced off in what became mockingly known as The Battle of the Stoney Creek Outhouse Meadow and argued, as only academics can, about whether the fire regimes of Banff were anthropogenic or natural. The brouhaha knotted several themes together, some scientific, some cultural.

The science thesis was that Canada's grand fire history obeyed climatic forces and that humans could no more alter fire's outcomes than they could the ebb and flow of ice ages. Fire management had no fundamental impact on fire's geography. There was no point in fighting fires, there was no point in lighting them, there was no point in fussing over fuels. The statistical outcome would be identical. There was no point in having a fire program at all except to save buildings from wildfire. This bold claim, backed by graphs, merged with biocentric beliefs to argue that nature, and nature alone, should be left to run its affairs. Whatever people did was either irrelevant or meddlesome.

The cultural argument, while unstated, ran in parallel. The political entity called Canada is itself an institutional response to outside forces beyond its control, of which the first and mightiest is climate. Climate change, moreover, is an apt model for other exogenous forces--imperial, political, economic, cultural--which Canada has to endlessly accommodate. It was possible to imagine Canada as a confederation of convenience arrayed to protect its population against global or continental powers over which it has little direct influence. The institutional turmoil that so characterizes its bureaucracies and its ever looser union is, in this sense, only a token of Canadian adaptations against what it cannot change.

Banff saw matters differently. In particular, Cliff and his colleagues saw the hand of humanity widely sculpting Banff's historic landscapes and they believed that removing that not-so-invisible hand from nature's economy could unravel Banff's biota, like a sloppy diamond hitch ready to dump boxes along a

trail. The Banff model suggested that Canada was not merely a shelter for survival but a positive act of human imagination and social will.

The fire-history controversy nearly split Parks Canada along ideological lines, and it dovetailed into another crisis that developed at Banff shortly after Cliff White returned. The explosive urban growth around Banff townsite--almost 10% per year--threatened to overwhelm Bow Valley. Unless that immense corridor remained open to wildlife, the Banff fauna could not hope to adapt and would be driven into deep-mountain holding pens. The park could not have both. Cliffie hurled himself into the task with characteristic elan. The environmental crisis in the Bow Valley could not be separated from politics, and neither could extricate itself from the ecology of fire. Wildfires would come when they weren't wanted, and controlled burns would be denied when they were needed. Banff's fire program moved out of the backcountry.

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The 1993 Sawback prescribed burn to the west of Banff townsite alarmed and rankled many observers: it was big, near, and visible in ways that backcountry fires in the Lower Panther or Flint's Park were not. The idea was to burn hugely: to burn broadly enough that aspen suckers could proliferate more abundantly than the resident elk could crop them off, and to begin pruning the fire hazards of the Bow Valley. Instead, the project aroused public ire and bumper stickers that read: "Fire A Warden, Save A Forest." The fire flushed into the open the various environmental maladies of Bow Valley.

The arguments for doing nothing were attractive: administrators had enough controversy on their hands without worrying about possible escape fires and valley-clogging smoke and carping from critics who dismissed the burns as alternately meaningless and dangerous. It was also a way to pen the restless Cliffie who had become intimately involved--intrusively so, to critics--in the massive Bow Valley Study, a comprehensive inquiry into the multiple ecological pathologies of Banff townsite and its environs. Tension mounted; the fire program was slammed shut. Then, in December, 1995, Cliff was dispatched into exile. The park was reorganizing, he was told; there was no longer any place for him in a supervisory role; he needed to disappear.

In January, 1997 he enrolled in a PhD program at the University of British Columbia. His thesis topic: wolves, elk, aspen, and fire in Banff. He graduated in June, 2000. By then the forces that had pushed him out had reconsidered. The Bow Valley Study had ended, its raw nerves healed over, but concluded

basically along the lines he had predicted it had to, a paradigm for the Canada-wide ecological integrity panel that succeeded it. The fire program had roared back, now a paragon of Parks Canada's commitment to putting policy into practice. Cliff returned to Banff, still without an administrative post, something of a gadfly, or better, a catalyst, not unlike the fires he had urged with such dash and conviction.

* * *

All afternoon the sky had darkened until lightning announced a climax and the downpour washed over Stoney Cabin. We could hear thunder echoing off the mountains.

Cliff seems unconcerned about possible fires the storm might kindle. Banff is typical of the east-slope Rocky Mountains in that, while lightning pounds the west side, kindling fires abundantly in Kootenay and Glacier parks, it only rarely does so in jasper and Banff. A few fires do start, and from time to time one spills over the divide, driven by chinook winds. But Cliff's study of Banff fire history had concluded that lightning accounted for only a tiny percentage of fires, although that percentage has grown as the overall population of fires has shrunk. From 1880-1980, lightning kindled only 7 out of the 53 fires that exceeded 40 ha. The more startling statistic was that the ratio of human-caused to lightning fires had been 25:6 from 1880 to 1940, but was only 1:1 thereafter. The common wisdom was that there were far fewer fires today because people had suppressed them. More reasonably, the fires had disappeared because people no longer lit them, whether deliberately or accidentally. People had set virtually all the giant fires of Banff's preceding two centuries. The 1936 burn spread from a campfire. The 1889 fires were sparked by the railroad. The 1929 Cuthead fire escaped from "careless campers."

The storm passes to the south, between Stoney Camp and Banff townsite, where the Cascade Valley joins the Bow. There, on the southeast-facing flanks of the Cascade Mountains, stands a large patch of lodgepole pine. It has not burned since 1701. No one knows why.

Banff Townsite lies a scant eight miles distant, where the widening Cascade Valley meets Bow Valley. We shun the direct route down Cascade--already we have encountered day-recreationists. Instead we veer westward and curve around the Cascade Range, where a creek breaches it and where in 2001 some prescribed fires attempted to burn off the south-facing slopes. But we can delay the exurban penumbra no longer. Its tentacles reach deep up the valleys.

We pass signs warning of mountain bikes. We pass the Mount Norquay ski lift. We pass day hikers and riders. We hear helicopters overhead; the first is on a fire reconnaissance after the storm (they find nothing), but others follow. We pass underground utility corridors for gas and water. We come to the Trans-Canada Highway. There are cars, trucks, SUVs, cars with sirens chasing other cars, trucks hauling more cars. There are planes and helos overhead. There are lights and powerlines. We pass underneath the divided highway through a wildlife tunnel. We cross the tracks of the Canadian Pacific Railway. We come to another highway, and press electric buttons to trigger traffic lights to halt the rush long enough for us to lead our stock over the asphalt.

We are traveling along Banff's greatest corridor. Everything else in the park bends to its flow. It is, not incidentally, a route of fire--of internal fire and fossil fuel, yes; but still a passage shaped by controlled combustion in the hands of humans. We have crossed the threshold into the world of industrial fire. Not far from Banff townsite, but well within the park boundaries to the east, are the remains of Anthracite, a coal-mining town, a reminder that the coal and steam in the form of the Canadian Pacific initially created the park, Canada's first.

The two Cliffs, father and son, discuss the changes the past two decades have wrought. They are both native Banffians, the second and third generation to be born in Banff, and the fourth generation to reside there. The family patriarch, Dave White, arrived with the Canadian Pacific in 1885 and stayed. One member with artistic ambitions, Peter White, changed the spelling of his surname to read Whyte, married well, and bequeathed the Whyte Museum. Their family history is inextricably intertwined with Banff.

Cliff, Sr. has worked at most jobs Banff offers--mountain ski guide, road maintenance cat skinner, gas station operator, ski area manager for the Sunshine ski resort. He knows the frustrations of living under colonial rule from Ottawa, as Banff townsite did until home rule was granted in 1988 and it could manage for itself the daily business of a town. He understands the travails of a highly seasonal economy dependent on tourism and government edicts and appreciates the extent to which those commercial services make the park accessible to the Canadian public. Yet he also thrills to the park's splendors. He remains, at 71, a spry outdoorsman; two sons have entered the warden service. He and Cliffie discuss plans to meet with their extended relatives in the evening. The park and its township, he knows, can neither exist without the other.

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The town resides like a small atoll amid a rising sea of conifers. The earliest photos of Bow Valley show a landscape of meadows with scattered trees, riparian woodlands, and patchy wetlands. Today, save where carved out by buildings and highways, it bristles with close-packed pine. A large crownfire--and that is the only form a large fire would take here--would blow through the town like pine pollen. Of all the landscapes in Banff, its signature city boasts the highest values and the greatest risk from wildfire.

The problem is that town and country don't mix, rather like a packstring meeting the Trans-Canada Highway. If Banff were a town, it could create an urban fire service. If it were a cluster of backcountry camps, it could adapt to wildland fire. But it is neither, and both. Worse, its metastasizing lodgepole pine have reached their prime age to burn as a crown fire. The most probable kind of fire is the one that will inflict the most damage. How to kindle prescribed burns to keep the Bow as a wildlife corridor while protecting the town from wildfires is an unenviable task that involves clearing extensive fireguards and selectively burning.

Cliff and Ian point out where this has been done at Noquay, Carrot, and Sulfur, though it is difficult to see much through the dense thicket of trees. It is harder still to imagine the hybrid combustion regime that would result. Urban folk distrust open flame and detest smoke. But, against all forecasts, Banff townsite has learned to accommodate passing wolves and cougars. (One cougar has even killed a resident.) They might, over time, learn to accept an equivalent dose of free-burning fire. The difference is this: they could kill off the wolves, grizzlies, and cougars if they wished. They can't kill off fire. Sooner or later fire will swarm to the town's borders. In 1841 a fire filled the Spray Valley, which joins the Bow exactly at Banff townsite, with wall-to-wall flame.

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Across the highway we ride through a lovely meadow at Whiskey Creek. Wolves have appeared sporadically here, warily threading under the highways as they might cross a frozen river; bears have not yet found their way through the maze. The aspen show hard wear from elk. The grove has not burned for decades. We ride on, across the pale of settlement. There are roads, shops, hotels, even a cemetery. At last, we come to a vast complex of corrals and barns, a scene as incongruous as a swidden patch in metropolitan Toronto.

Whatever threat fire might pose to the town, the greater threat is the one the town poses for fire. Banff town and Banff Park headquarters are the prime movers of this biota's fire factory. Information and institutions rival drought and forest structure as molders of flame's dynamics. Humanity's control is hardly total: lightning will persist, and some wildlands will burn, although perhaps in ways very different from those they have known for millennia. Yet today the fire regimes of Banff are indisputably shaped by humanity. The park decides whether and how fires will be suppressed, whether and how lightning fires will be allowed to burn, whether and how prescribed fires will be kindled. The park hired Cliff, the park nearly fired him, the park reinstated him. What Cliff and Ian and Parks Canada en masse have realized, moreover, is that these circumstances did not begin with the Canadian Pacific Railroad and the Banff Springs Hotel. Rather, humanity has, since the retreat of the ice, structured the park's fire landscape as fully as wolves have influenced its dynamics of elk and aspen.

It is the ultimate top-down model of ecology. Among the many megafauna of Banff, one shapes its surroundings not simply by digging or hunting or chewing trees but by burning or not burning. Hominids are the fire creatures: they are, through fire, the keystone species that will, for good or ill, wisely or idiotically, intentionally or accidentally, catalyze a world that the other creatures must inhabit. Wolves, grizzlies, cougars, elk, mountain goats, bighorn sheep--each has unique qualities, but to some degree another can substitute. If a niche opens, some other animals will enter it. But not with fire. There is no other biological source of ignition than humanity. Life created oxygen, life created fuel. What life could not do is kindle, or it could not until Homo arrived, and allowed the biosphere to very nearly close the cycle of burning. If humans fail, there is no other creature to do it for them.

We unsaddle and unpack for the last time. Horse trailers will haul some of the stock back to Ya Ha Tinda. A van and pickup wait to take us to park headquarters where, in truth, our trek has trended from the time it began, for our journey from the Red Deer Valley to the Bow has been a journey through time as well as space. The ontogeny of our travels has recapitulated the phylogenic history of humanity as an ecological agent in Banff. Along the Red Deer aboriginal North Americans walked, hunted, foraged, and burned. Along the Bow today, contemporary Canadians drive, observe wildlife, snap photos, and burn--or not. They must decide whether to apply or withhold fire and in what forms and to what ends.

They remain the predator of predators. They have, as part of their genetic inheritance, a capacity beyond fangs, talons, claws, and smell, a power greater than the tireless lope of a wolf or the brute strength of a grizzly. They can start and stop fire. If Cliff White and his cohorts are anywhere near correct in their reading of that land and its history, fire is the keystone catalyst for its future, whatever they and nature decide that future might be.