

REFLECTIONS

burning border

ABSTRACT

The United States and Canada approach wildland fire differently. Fire matters to both countries for reasons of economics, public safety, duty-of-care to nature preserves, and bureaucratic identity and inertia. A useful survey of their differences could focus on three simple indices: how each assesses fire threats, how each assigns responsibility for fire management, and how each relates fire protection to land use. In all three instances, each country has evolved apparently similar but in reality parallel strategies that, like their shared border, meet but don't merge. These differences reflect larger national traits.

IT IS OFTEN SAID that fire is no respecter of borders. In fact, it respects any boundaries that affect its ability to propagate. Satellite images routinely reveal stark contrasts in fire behavior among landscapes partitioned to farming, ranching, nature preserves, public forests, shopping malls, and exurbs. The U.S.-Canada border is no exception. The delineation would remain abstractly political if both countries had identical land use, adopted similar fire policies, and managed fire the same way. They don't. There are national styles in fire as in literature and health care. Their practices are only superficially interchangeable, like pumps and CL-215s. In their deep structure their fires differ as much as the divergent politics behind the American style of federalism and the Canadian brand of confederation.

Does fire really matter? Here an answer is simple: Canada is a large and combustible swathe of fire-planet Earth. Historically, fires swept its prairies every two or three years; combusted its Cordilleran forests every five to fifty; and devoured its boreal forest, in

immense chunks, every 50-120 years, a rhythm of binge-burning equaled solely in Russia. Only its sodden outer limits, Haida Gwaii (the Queen Charlotte Islands) and Cape Breton, have evaded serious burns. On average Canada now experiences 8,500 fires a year that burn 2.5 million hectares, although statistics mean little in a place where the episodic big burn does all of the ecological work and where fires can blister 7.5 million hectares in a summer. All this matters because Canadians have sought to shield much of their national estate from flame and now spend \$500-\$900 million annually on the effort, a number galloping upward. The determination to battle blazes has come from commercial concerns over timber, a need to protect vulnerable human settlements, and bureaucratic inertia. Canada's forest fires are thus a matter of economics, public safety, duty-of-care obligations to nature preserves, and, for those agencies who fight or study them, institutional survival. In all this it resembles American cognates-with a difference.

By way of example, reflect how each assesses fire danger, how each distributes responsibility for fire management, and how each relates fire protection to land use. (The fire communities of both countries are congenitally partial to grouping by threes-the fire triangle serving as the water cycle does for hydrologists.) In all three instances, each country has evolved apparently similar but in reality parallel strategies that, like their shared border, meet but don't merge.

Begin with differences in assessing fire threats. Fire-danger rating began in the 1920s and the U.S. Forest Service soon directed part of its research apparatus to the task, fashioning regional indices tied to the character of the local forests. The Canadian Forest Branch, which had otherwise closely modeled itself on the USFS, struggled, however, to support much research. But in the late 1920s James Wright, against grudging acquiescence, and with the assistance of Herbert Beat], established a research program at the Petawawa, Ontario, experimental forest. Every ten to fifteen years thereafter the Wright System underwent expansion and extensive updating, and eventually was adopted with modifications by all the provinces.

Each revision deliberately built upon its predecessor, back engineered so that the upgraded index could still access old data. That data came from hundreds of small, experimental fires set under quasi-controlled conditions in a variety of forest settings. By the late 1950s the index had both disseminated and distorted, as each province tugged and warped the national ideal into forms it deemed pertinent. Then the U.S. Forest Service invited its Canadian colleagues to join in the search for a more general index, an offer declined but renewed in the early 1960s as the Americans geared up for a major program, one grounded in laboratory experiments and first-principle physics that would transcend arbitrary borders. Again, the Canadians demurred, worried that they might become mere hewers and drawers of data, subsumed under an American schema very different from their homegrown variety, and all this at a time when America's fire-science literature was a "flood" and Canada's a "trickle." Many were skeptical that the premises behind the American strategy could be met. They decided to upgrade the Wright System once again, this time at parity with the Americans. Calling on the title of Hugh MacLennan's great

novel on the divide between English and French Canada, Canadian fire scientist C. E. Van Wagner characterized the situation as "the two solitudes of fire research."¹

The Canadian Forest Fire Danger Rating System (CFFDRS) was one of the singular achievements of Canadian science. Revealingly, while released over a series of years, it was contemporary to Margaret Atwood's study of Canadian literature, *Survival*. And this association, not the specifics of lab versus field or physical versus empirical models, is what most distinguishes it from the American National Fire-Danger Rating System. The Canadian strategy assumed, as Atwood did, an outside world that was hostile, immutable in its core properties, and threatening. As a result, the CFFDRS offered a simple way to assess the threat posed: to sample the weather and then correlate those measurements with actual fires. The deep physics were irrelevant. Fire agencies could not alter those circumstances, but they could prepare to resistor rebound from the forecast blows.

The American strategy assumed otherwise. It was premised on an understanding of fire fundamentals, encoded into a fire behavior model that grew out of lab experiments and mathematical-physical principles. It had ample flaws--its devisers, particularly Richard Rothermel, were frank about its limitations and aghast at the reckless extrapolations made from it--but the nuclear fire model held its DNA. Into it were fed the typical parameters that affected open combustion: weather, topography, fuels. While it might be tested against lab (and field) fire, the outcome was not a correlation. The fire model integrated those conditions and then spit out a forecast behavior. Implicit in this arrangement is the assumption that one could change the outputs by altering the inputs--that is, one could tinker with the mechanics of fire. In principle, America's fire agencies were not simply victims of environmental circumstances: they could intervene and alter the outcome. The best Canadians could do was to predict events over which they had scant control. Americans assumed they could influence those outside forces.

Consider, next, the politics of national fire. The United States had tried confederation, rejected it, and then underwent a brutal civil war to confirm the priority of a national government within a federal system. As new states joined, they surrendered their unpatented lands (Texas excepted), which yielded a public domain encompassing roughly a third of the national estate. These lands became the scene of America's wildland fire establishment, with the U.S. Forest Service becoming the medium for truly nationalizing fire protection through cooperative arrangements with other federal bureaucracies and the states. It provided a central infrastructure of policy, equipment, and research. By contrast, Canada amalgamated reluctantly, pushed by imperial politics and pulled by the need to tap the international bond market (what a cynic might characterize as an exercise to keep Quebec in, the United States out, and the railroads financed). A continental state was facilitated by the entry of Manitoba in 1870 and British Columbia in 1871, but it depended most on the acquisition of Rupert's Land from Hudson's Bay Company in 1870. This domain provided the vast northern and western estate that makes Canada more than a vignette of colonies along the American border. These lands were organized into

territories, and then provinces, not unlike what happened in the American West. And as with the West, their bulk remained Crown land under the administration of the Dominion. Eventually, on the model of the U.S. Forest Service, a Dominion Forestry Branch was created to oversee both an extensive archipelago of forest reserves and the forested domain between them. The links between the American and Canadian forestry establishments were close, different only in scale.

In 1930 the Mackenzie King government ceded those lands to the western provinces. Overnight, Canada lost a national narrative for fire protection (and in many respects, for forestry). The provinces and they alone, controlled the natural resources: the land, waters, minerals, woods, and prairies. The Dominion Forest Branch collapsed, spared complete dissolution only because of its research program. There would be no institutional infrastructure equivalent to the U.S. Forest Service around which national norms could evolve. In Canada it was as if the Sagebrush Rebellion succeeded. The Canadian Forest Service endured only as a national lab, an agency to do research and advise Ottawa, though about what continues to haunt its identity.

All this left fire protection with the provinces. The problem is that the rhythms of boreal fire are out of synch with the dynamics of political confederation: the provinces, even the largest, are too small to absorb the big fire years. The macroeconomics of fire protection resembles that of commodities. It mimics Canada's traditional "northern economy" of fur, fish, forests, and, later, (wheat) farms, all of them subject to wild, uncontrollable swings due to weather or exogenous events over which producers have no control. The only solution is to become large enough to absorb and dampen those waves, which is what Canadian industry has historically done. Similar swings affect fire protection such that no agency can survive the really bad year; it must seek help from others. And for those years that ripple across many provinces, they must seek a national pool. Canadian politics, however, prevented any consolidation because the provinces refused to yield even symbolic control over natural resources to Ottawa. What they wanted was financial subsidy and a national air-tanker fleet. This debate characterized Canadian fire protection from its origins; it was a prominent, unresolved item during the 1924 Forest Fire Conference. Sixty years later it persisted in essentially the same terms.²

What broke the logjam were, first, the 1979-1981 fire years, which overran even the most muscular provincial efforts and, second, a long-negotiated mutual-aid treaty with the United States that would allow Canadian agencies to tap into American resources (and vice versa). Over the years provinces had been joining American fire cooperatives, beginning with Quebec and New Brunswick and the Northeastern Forest Fire Compact. To regularize these arrangements, the U.S. State Department sought a general agreement among the sovereign states. But Ottawa struggled to negotiate with Washington because the provinces had jurisdiction over fire, and provinces preferred to cut their own deals. Agreement occurred only when the provinces realized their requests for American aid would go to the National Interagency Fire Center (NIFC) in Boise and there join the

queue. In effect, American dispatchers would be ranking Canadian requests relative to American ones.³

The provinces decided that they preferred Ottawa to Boise, Idaho, and an emerging consensus led to a Canadian Interagency Forest Fire Centre (CIFFC) in Winnipeg as a counterweight, through which any requests for assistance would be channeled. Here, again, national styles intervened. NIFC is a government institution; CIFFC is a corporation which the provinces and federal agencies jointly fund. The provinces thus devised a way to extort a national air-tanker fleet from Ottawa without surrendering any sovereignty over how it might be used. The prod, though, as so often in Canadian history, came from the United States and a perceived (if fallacious) fear that Americans would stealthily claim control over vital Canadian concerns.

Not least, consider how each country imagines its fire institutions. Both of course, as descended from a common heritage of foresters, have emphasized the economics of timber protection. But the United States argued for the whole spectrum of "forest influences" and thus made fire control a fundamental duty even for lands well removed from any commercial exploitation. Canada did neither. Its forestry has been more corporatist and commercial, and fire protection has tacked close to the winds of provincial finances. An 1899 Royal Commission in Ontario famously equated fire protection with forestry, arguing that there was no need for elaborate and expensive systems of silviculture on European models, that fire protection would, by itself, ensure new timber berths in remote land and regeneration on cutover. Fire control was an insurance premium, a service rendered to forest industry. In brief, the provinces behaved much like American states.⁴

There was no mechanism in Canada to float the discussion of fire management beyond that calculus. At a time when the Roosevelt Administration invested heavily in the American public domain, an effort to rehabilitate both land and society, Canada moved in the opposite direction, divesting its specifically national estate to the provinces. The United States thus had a forcing mechanism, the public lands, to elevate discussion above local prejudice and budgets; Canada did not. The one exception, Parks Canada, only proves the rule, for the agency has become a spectacular source of innovation.

During the 1960s an extraordinary national debate forced changes in how the American government conducted fire management. Prodding the revolution were several legislative reforms, especially the Wilderness Act. The pith of the discourse was that fire control did not exist for itself: it had to serve land management, and since lands differed in their purposes, so fire management had to vary in its practices. While initially intended to stall a fire-suppression juggernaut, the reforms also demanded that land use planners accept fire as a fundamental, even "natural," feature of the landscape. By 1978 both the Forest Service and National Park Service had reconfigured their policies and ambitions. The enterprise was, at heart, fire's great cultural revolution, a reformation in values and philosophies.

No such revolution struck Canada. There was no mechanism to elevate debate beyond

close-to-the-bone provincial concerns. Fire protection was not embedded in everything the governing agency did on Crown land but a service best evaluated by its "efficiency," namely, how much timber could be shielded at what cost. The Canadian genius was for applied knowledge: Canada excelled at pumps, hoses, air-tanker operations, dispatching procedures, fire-danger rating. There was no national conversation about fire ecology or fire-suppression alternatives, save in Parks Canada. The thrust of every discussion was to acquire more means to advance the stated (and unquestioned) ends, to push fire protection further and thus enhance logging and regeneration. Even CIFFC and the CANUS treaty increased the means at hand without redirecting them to new goals. The trend reached a macabre climax of sorts when British Columbia seriously considered privatizing its forest fire protection, treating it as a contract service like collecting garbage or paving roads, at least until the 2003 fires redefined fire protection as a matter of public safety.

Partly this reflects, for the Canadian fire community, the lack of a national institution and partly a reluctance to question basics, for Confederation was a carefully balanced array of jealous and competing political interests and it was wiser to emphasize technical matters than deeper philosophies. Such a strategy, and philosophy, has had mixed results globally. The most vigorous fire countries are today the United States and Australia, in good measure because they have had to grapple not only with fire on the ground but with fundamental issues of what kinds of fire policy and practices are suitable. Those discussions have become a vital background to thinking, but they export poorly in their particulars precisely because they are bonded to core cultural issues and national identity. By contrast, Team Canada markets pumps, airplanes, and high-tech dispatch software, something that can be slotted into any national framework. In fire, Canada has become a universal collaborator, rarely a leader.

Presumably each country has a system for wildland fire management that suits its larger sense of itself. There are reasons to believe the two nations will move closer in the future. Just as CIFFC has helped make all the provinces (and territories) more resemble each other by establishing standards necessary to transfer personnel and equipment, so ample exchanges across the border seem bound to nudge both Canada and the United States nearer in thought and practice, a kind of NAFTA for fire management. Closer-but at some point Canadians will balk and demand to be different. That's a border that even fire must respect.

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NOTES

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1. For a historical synopsis, see C. E. Van Wagner, "Development and Structure of the Canadian Forest Fire Weather Index System," *Forestry Technical Report 35* (Ottawa: Canadian Forest Service, 1987). For national contrasts, see C. E. Van Wagner, "Comparison of American and Canadian Forest Fire Danger Rating Systems," Petawawa Forest Experiment Station, *Information Report PS-X-2* (May, 1966); and C. E. Van Wagner, "Two Solitudes in Forest Fire Research," *Information Report PS-X-29* (Ottawa: Canadian Forest Service, June, 1971).
2. *Forest Fire Conference. January 7.11, 1924*, National Archives of Canada, Record Group 39, vol. 597. 1924 Forest Fire Conference.
3. A useful digest of developments is available in J. W. Paisley, "The Canadian Interagency Forest Fire Centre. A Brief History," unpublished manuscript (December, 1983), on file, CIFFC. See also "CIFFC Developmental Group Final Report," May 27, 1982, Historic Files CIFFC. The major documents are available in the National Archives of Canada, RG 39, Accession 94-95/769, Box 31, File 1165-36/C8-29, Vol. 1. Note, too, that duplicates of all the relevant documents, and many others, are housed at CIFFC (actually in a broom closet).
4. Report of the Royal Commission on Forestry Protection in Ontario 1899 (Toronto: L.K. Cameron, 1900).