

It will take more than mere science to deal with the wildland-urban interface issue, argues the author. In addition, what is needed are the “skills, talents, and approaches” of historians and the long perspective that history offers. What historians bring to the WUI issue, observes the author, could be used to improve our handling of many other environmental problems. She explores how to apply history in order to do so.

FIRE ALARM

HISTORIANS, AND THORSTEIN VEBLEN, TO THE RESCUE

Call 911, and the phone will not ring in the History Department. Curiously, when people find themselves in trouble, it seldom occurs to them to summon a historian. And yet it has been my extraordinary good fortune as a university-based historian to have been the recipient of many such calls. At

the University of Colorado’s Center of the American West, the effort to “transform hindsight into foresight” keeps us on our toes as we respond to a flurry of requests to bring historical perspective to bear on the dilemmas of our time. Whatever help we may have provided to people in trouble, this strenuous activity serves the bedrock purpose of keeping us mentally fit. The practice of “applied history” has booted me out of familiar habits of mind, making me rethink, reconfigure, and sometimes reject interpretations of western history that I once found compelling and obvious. Moreover, it has always been at once humbling and comforting that, wherever I have ventured in this terrain, Stephen Pyne has been there first, writing books and articles of enormous insight, and talking to thousands of people—environmentalists, Forest Service staff, state and local elected officials, and uncountable reporters—to enhance the public understanding of the history of fire and human beings.¹

The subject of fire in the wildland-urban interface (WUI) has been especially effective in immunizing me against the historians’ fallacy that David Hackett Fischer labeled *the fallacy of argument ad nauseum*, “in which a thesis is sustained by repetition rather than by reasoned proof.”² Readers of this essay will, I hope, see evidence of the way in which the invitation to join the forum

in Boise, to hear a number of very bright people talk about fire at that forum, and then to write this essay has reduced my risk of committing *argument ad nauseum*. When I wrote *The Legacy of Conquest*, to forecast an example or two for what will follow, the word “externality” was not in my vocabulary, and it had never occurred to me to enlist Thorstein Veblen to the cause of western self-understanding.

In the early twenty-first century, Americans play the sport called Drawing Lessons from History without much in the way of rules. When fire spreads over the wildlands of the American West, many players leap into this vexing and yet very popular form of exertion. In any summer when fires are common, people race through the historical record in search of the lessons that will release the players and their teammates (if such an incoherent sport can be said to have teams) from blame and responsibility and, instead, place those weighty burdens on someone else’s shoulders.

And yet the use of history to blame a contemporary person or group makes a poor match to the subject of wildland fire. The current susceptibility to fire of so many western forests arises from a long history that reaches back in time, well before the birth of anyone living today. Thousands of people, many of them

BY PATRICIA NELSON LIMERICK



U.S. FOREST SERVICE, FOREST HISTORY SOCIETY PHOTO COLLECTION, FHS 2566 (LEFT), COURTESY OF THE U.S. FOREST SERVICE (BELOW)

Someone call a historian—there’s a fire in the wildland-urban interface. The one above is approaching Pasadena, California (probably the Big Santa Anita fire of 1900), and the one below is from the Grass Valley Fire in southern California in 2007, about 55 miles due east of Pasadena. Historians can draw on many different types of sources to bring historical perspective to current environmental issues.

long dead, had to do their part to create a mess of this scale. Thus, approached with even a minimal commitment to accuracy, the search for historical lessons on the subject of WUI fire instantly gets us off on a better foot, since blaming other living human beings for our troubles is, finally, as silly as it is fruitless.

That recognition, in itself, begins to clear the air.

To celebrate the benefit of long-term historical thinking, it is useful to remind ourselves how the human mind and, alas, the human larynx operates in its absence. In August 2000, as fires raced through Montana, Governor Marc Rociot squished the enormously complicated causes and effects of wildland fire to fit within the terms of partisan crabbiness. “The Clinton administration didn’t cause these fires,” he said, drawing a mysterious distinction between *causing* and *leading to*, “but their myopic environmental philosophy leads to explosive fires that destroy everything.”³

Were there a prize for Most Stale and Least Productive Analysis of Historical Causality, Governor Rociot’s entry might prove a winner, though heaven knows, the competition is very stiff. In truth, remarks like his have become so common, so stale, and so tedious that they are losing their power to rally the troops.

I now ask readers to ride a train of thought bound for a terrain of cheer and optimism. This train starts from the not-instantly-persuasive premise that the subject of wildland fire offers an extraordinary opportunity for citizens and officials to experiment with innovative and productive ways to think about a familiar problem. And from there, the train moves to its next stop: whatever we can find for ourselves in the way of historically



grounded lessons about fire will have great bearing on many other environmental dilemmas. If we can devise methods to untangle the snarls in our collective thinking about fire, those methods will have considerable value when we apply them to matters like the allocation of limited water, the constriction of valued wildlife habitat, the shrinking inventory of sites showing a minimal impact of human activity, and the constraints closing in on the dream of the West as a place of freedom.

Whenever fires flare up, threatening homes and other structures placed in heavily forested territory, we receive an intense and compelling invitation to confront the consequences of our impulses, ambitions, and aspirations. We are invited, as well, to

contemplate the outcome of our restiveness with regulation and restraint. Every time a wildland fire bears down on houses in locations selected because residents want to enjoy the scenic pleasures of a forest setting, we are provided with an opportunity to reject the narrow and sterile characterizations of our troubles, like the one offered by Governor Rocicot. Fire in the wildland-urban interface offers us a kind of one-stop worrying: if we can improve our approach to this problem, we exercise skills, talents, and approaches that could improve our handling of many other environmental problems. Every wildland fire, in other words, issues us an invitation to make an honest reckoning with the consequences of our choices—that is, to grow up.

So how did we get into our current pickle? First, a simple answer, followed by a more complicated answer. Three factors came together in a convergence of trouble:

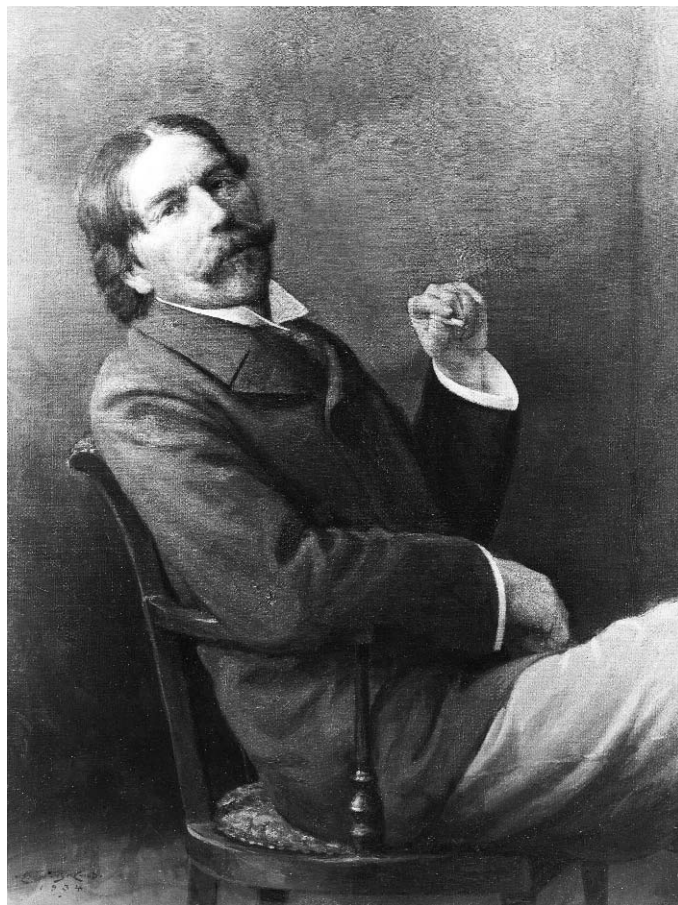
- a policy born in the Progressive Era that required the suppression of forest fire because it seemed an intolerable waste of valuable timber, leading in some forest ecosystems to a proliferation of forests with an unprecedented density of trees and accumulation of flammable material;
- a population boom in the interior West, driven by an enthusiasm for exurban settlement, scattering new and often very expensive homes in forested areas that had been subject to recurrent natural fire before the suppression policy kicked in; and
- the rise of a powerful, paternalistic federal government whose powers and promises encouraged the assumption that the government would fight fires and pay the expenses incurred by rescuing homeowners and homes.

So much for simplicity. Now on to a more complicated tale.

In the beginning, the American West had one of the most effective growth-control policies on the planet. Enormous spaces, difficult terrain, and a chancy climate worked wonderfully to convince Americans that they would be happier living elsewhere in the nation. Even when precious minerals drew prospectors and miners into the mountains, many so-called settlements turned quickly into ghost towns. For decades, isolation and remoteness enforced a very restrictive form of land-use planning in the West.

Every time a road was constructed, this “policy” lost a unit of effectiveness. With the popularization of the automobile, the policy finally unraveled. Every paved road opened new terrain to homeowners, dramatically expanding the scope of the places considered convenient locations. As distance, elevation, and snow lost their power to discourage settlement, new questions came into play. When would Americans recognize that the initial system for regulating the spread of settlement had broken down? When would they conclude that there might be wisdom in creating new forms of regulation to take the place of the control once so effectively supplied by remoteness and isolation?

Before any conclusive answers to these questions could manifest themselves, the enterprise of placing houses in forested areas was encouraged and aided by an unlikely force—the growing power of nature lovers, preservationists, and environmentalists. From Henry David Thoreau to Edward Abbey, enthusiasts for nature had been wonderfully successful in persuading Americans that a life lived close to nature was a better, more balanced, and even more virtuous life. Once this idea settled into a permanent home in the minds of many upper- and middle-class people, the die was cast, and the undertakings of thousands of developers,

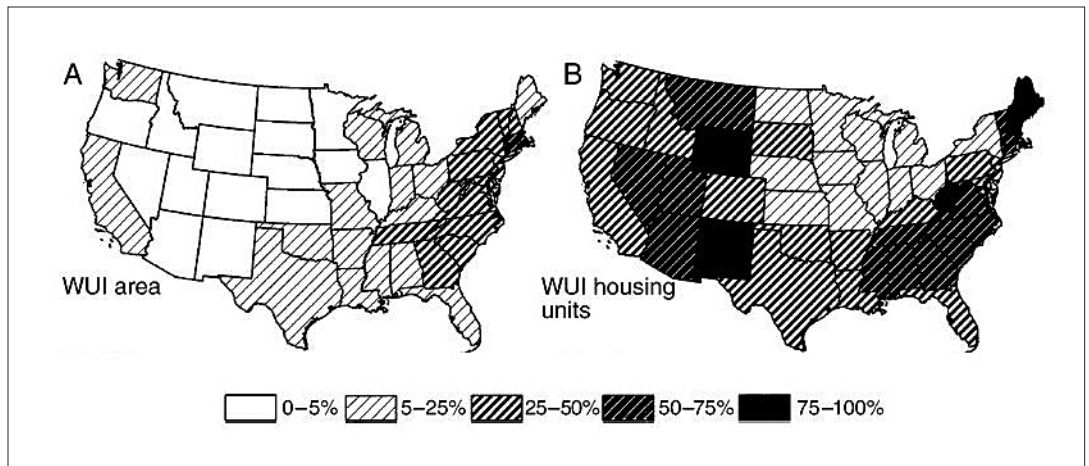


COURTESY OF THE YALE UNIVERSITY ART GALLERY, GIFT OF THE ASSOCIATES OF THE SITTER

*Thorstein Veblen argued in his classic economic treatise, *The Theory of the Leisure Class*, that the display of material wealth required an audience of peers in close proximity. More recent practitioners of conspicuous consumption may have become less conspicuous by building in the wildland-urban interface, but in doing so they have put their holdings at greater physical risk.*

building contractors, and real estate agents were made correspondingly easy. One cannot help wondering what might have been the result if the intellectual ancestors of the population now known as environmental advocates had put a little more effort into thinking ahead. What if lovers of undisturbed landscapes had kept quiet about the uplifting effects of proximity to natural beauty, and if they had instead celebrated the joys of city living? What if Thoreau and Abbey had written about the pleasures of having so many fine friends, libraries, lectures, and gardens close? What if the Sierra Club and the Wilderness Society had become known for calendars with beautiful photographs not of stunning mountains and canyons but of city parks alive with festive bands and dancing people, of street fairs and farmers’ markets where merry and healthy families stroll and chat, of children on cheery play-dates in neighboring condos and in apartment hallways, while their suddenly leisured parents are released from the burden of driving their offspring hither and thither? Think of the wildlife habitat that would have been left undisrupted by oversized log cabins, and think of the reduction in the number and value of structures requiring protection from fire! And it may not be too late; many environmentalists have realized that antiurbanism is a luxury they cannot afford and really do not want.

WUI characteristics at the state level as of 2001: (A) WUI area as a percentage of total land area, and (B) WUI housing units as a percentage of all housing units.



Even more important, a celebration of human beings living in density exonerates environmentalism from the charge of misanthropy. Casting human beings as an infection of Earth did not, multiple experiments have shown, turn out to be a particularly clever vote-getting strategy.

Another contributing factor to the exurban expansion of the late twentieth century arose from the fact that the rich had, when it came to their own vanity and self-interest, lost their bearings. A century ago, in his inspired book *The Theory of the Leisure Class*, Thorstein Veblen provided a memorable description and appraisal of the practice he called conspicuous consumption.⁴ Writing of the holders of new and vast fortunes in the late nineteenth century, Veblen made a very clear case that the display of material wealth required an audience of peers in close proximity. For the most gratifying form of conspicuous consumption, the wealthy had to place their holdings (whether in the form of mansions or jewelry, servants or ball gowns) where other wealthy people could see and envy these holdings. Over the course of the twentieth century, many of the practitioners of conspicuous consumption lost their way: by building enormous, expensive homes in sites far off the beaten track, they surrendered the fun and satisfaction of parading their wealth before their equals. If teachers at prep schools and professors at Ivy League universities had only been more consistent in assigning *The Theory of the Leisure Class* to their privileged students, maybe the wealthy could have remained better attuned to the satisfactions delivered by the “clumping and clustering” form of conspicuous consumption, and the exposure of costly structures to wildland fire might have been correspondingly reduced.

And then there was the long historical episode we will call the Externality Holiday, an unusual holiday since it occurred every day, for years and years. What are externalities, and why have Americans so much enjoyed their suspension for a century? For many commodities and services, the consumer has rarely paid the full cost. A food item in a grocery store, for instance, will be available because federal and state funds paid for the highway for its transport, but the price of that item will not reflect the cost of that highway. The burning of gasoline in automobiles will send a certain number of children to the hospital with asthma attacks, but the price of the gasoline will not reflect the costs of their medical care. A development of second homes in a forest will be made viable because county, state, and federal funds built a highway to that locale, but the cost of the homes will rarely

include a grateful reimbursement to those governments for the road that made the houses accessible.

In this manner, for much of the twentieth century, the externalities for hundreds of commodities and services have remained unseen, deferred, pushed aside, and handed off to taxpayers or other suckers. The holdings of our wallets and bank accounts have been protected and much enhanced by the century-long Externality Holiday. Of all the people who did not have to pay up front for the full cost of producing the goods they wanted, the owners of exurban residences may well lead the pack.

And where, then, have the costs of fighting wildfires landed, if not on the owners of the homes built in risky locations? In August 2008, U.S. Forest Service Chief Abigail Kimbell declared that “spending on fires could reach \$1.6 billion this year, about half the agency’s budget.” This would require transferring money from other operations—“restoration projects, building maintenance, land acquisition plans, research,” and “fire prevention and safety” programs. We have designed multiple ways to steer around and away from externalities, and this arrangement—by which, in the words of a Wilderness Society spokesman, “the Forest Service is basically becoming the fire service”—brings the question to a focus: how much longer should the Externality Holiday go on?⁵

For the better part of a century, many Americans have yielded to a temptation to treat responsibility as a hazardous substance and to think of the federal government as a waste repository for its management. Wildland fire offers a prime opportunity to rethink this custom. A change in behavior and attitude would be full of implications and promise for a society in which a sense of victimization, almost a preference for passivity, drains the energy and reduces the spirit of many groups of citizens. The expense and burden of dealing with wildland fire present a particular advantage as a case study. We are in the habit of discussing the topic of federal aid in the context of the poor and their understandable fondness of and enthusiasm for welfare programs. Thus, the case study of a system of aid that preponderantly benefits the middle and upper classes gives a freshness and an edge to an otherwise overly familiar discourse.

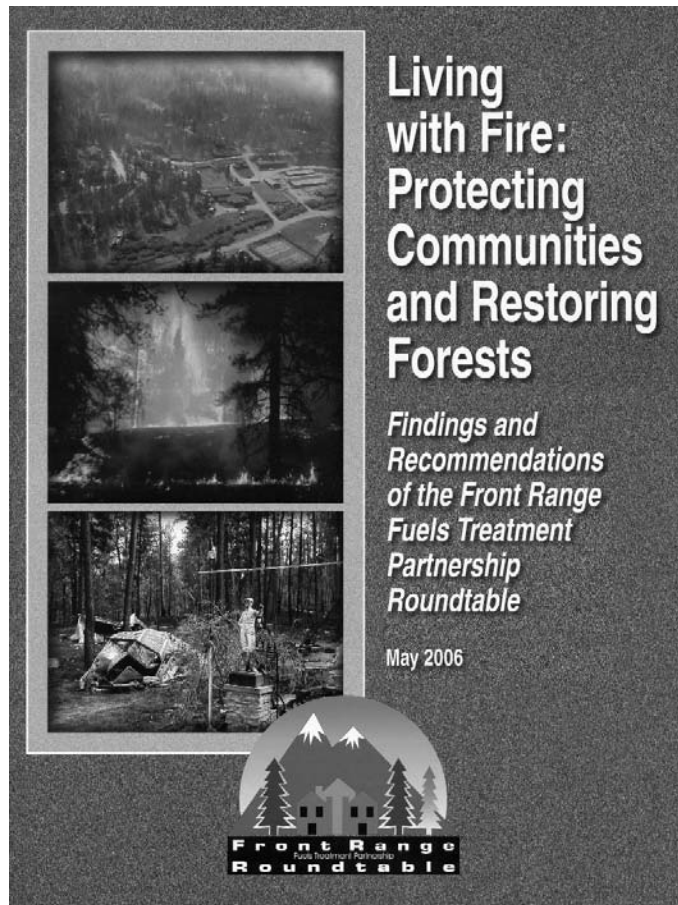
Controversy over WUI fire comes in for a landing on the federal and state land management agencies. The fact that half or more of the lands within western states are under federal management has distracted us from the equally important fact that privately owned lands are of equal, and sometimes greater, importance when it comes to environmental problems and their reme-

dies. The importance of privately owned lands has, for instance, come to the center of attention in the implementation of the Endangered Species Act, since many of the species listed as threatened or endangered do not live solely on public lands, and the management of private lands is thus crucial to their well-being. And, given the attractiveness of the undeveloped landscapes of the Forest Service, National Park Service, and Bureau of Land Management, private lands on their borders have gained an “unearned increment” of value and proven particularly popular for residential development.

In the meetings of a typical stakeholder group in Colorado, the Front Range Fuel Treatment Partnership Roundtable, discussions took a turn when the participants woke up to the fact that “approximately 60% of Front Range forests requiring treatment [because of the likelihood of fire from fuel buildup] are located on private land.”⁶ This was a sobering recognition, since it is no easy matter to identify the leaders who hold the allegiance of or exercise authority over the private landowners. There are administrative structures and chains of command in the Forest Service and the Park Service, but there is nothing comparable in the way of a defined political organization of private landowners in forested areas. Centralized, top-down control can look surprisingly appealing when you try to figure out a way to persuade a fragmented group of landowners to work together to reduce their exposure to fire. It would be wonderful to be able to say, “Take me to your leader,” and to be escorted to a person whom the others would follow.

Even though authority seems more centralized in governmental agencies, responsibility is a matter of some perplexity in this world, too. One of the most important stories of western American history has been the creation of agencies and other units of governance and the drawing of lines around the turf (“jurisdictions,” I once labeled these in a Freudian typographical error) assigned to each of these institutions. Review, for a moment, the host of claimants to territory and authority: U.S. Forest Service, National Park Service, Bureau of Land Management, Bureau of Reclamation, U.S. Fish and Wildlife Service, Environmental Protection Agency, individual states (each with a set of agencies—parks, forests, natural resources, fish and wildlife, highways, etc.), tribes, counties, municipalities, and special districts (water conservancy districts, utility districts, school districts, mosquito abatement districts, etc.), with each of these entities having its own institutional “culture” and often its own distinctive, prickly sensitivity. And then think about the utter indifference that wildland fire holds for all these borders and boundaries, including the most sensitized boundary of all—the line dividing public land from private property.

With the rarest exception, every WUI fire is an interagency fire. For newcomers to this subject, “interagency” may seem flat and unevocative. No singing cowboy has yet tried to work the word into a ballad, and no Hollywood western permits the word to appear in its title or dialogue. This is too bad. There is a lot at stake, and actually a lot of drama, in that quixotic human enterprise known as “interagency cooperation.” We need to employ every tool we have to remind citizens that this multiring circus of agencies, all of them in some way or other directed toward the public good, is our inheritance, and aiding them in the cause of actually identifying the public good and pursuing it in a coordinated way is part of our privilege as citizens. Why not regional



In 2006, the Front Range Fuel Treatment Partnership Roundtable report noted that “approximately 60% of Front Range forests requiring treatment [because of the likelihood of fire from fuel buildup] are located on private land.” This proved sobering to many participants, since it is no easy matter to identify the leaders who hold the allegiance of or exercise authority over the private landowners.

performances of a rewritten *Romeo and Juliet* in which Romeo is the son of a Forest Service supervisor and Juliet is the daughter of a county commissioner, and they are, obviously, ill-fated lovers who cannot marry? As they flee into the forest in search of sanctuary, they remain ill-fated and run into a forest fire. But then parental concern brings Romeo’s father and Juliet’s father to prepare a memo of interagency collaboration. Romeo and Juliet, rescued and allowed to marry, have delightful and charming children of interagency ancestry.

With or without the help of regional Shakespeare festivals, every fire season asks us to look at the big pattern in the allocation of authority to these agencies, and to ask ourselves whether this is truly the best plan we can design. Although the idea of restructuring and reconfiguring all these well-established agencies may seem far from practicality, human history records many episodes in which governmental structures were reworked and transformed. If monarchies have become democracies, if provinces have merged into nations, then it may be worth our while to let our imaginations loose on this question: since so many of these agencies with jurisdiction over some piece or part of the fire puzzle are of fairly recent origin, are they more pliable than we think? If we let our critical creativity off the leash



In addition to these federal land management agencies, there are states with agencies, as well as tribes, counties, municipalities, and special districts, that all have to contend with each other and private landowners when dealing with fire in the WUI.

and thought about the problems of coordination posed by wildland fire, could we discern the outline of a more sensible and productive arrangement of agencies and authority?

A century ago, when Chief Forester Gifford Pinchot declared that forest fire was now completely under human control, his words represented an apex of confidence in federal agencies and scientific expertise. In the Progressive spirit, Pinchot believed that scientific experts could make a full and complete discovery of how a natural process worked and then direct, manage, and orchestrate that process to achieve results. In the century since Pinchot occupied the crest of confidence, hundreds of examples have demonstrated that science conducted in the controlled circumstances of a laboratory is quite a different enterprise from science conducted in the outdoors. With so many variables in play in any forest, from threats to the well-being of soil organisms to the onset of drought, duplicating the precision of controlled experiments in laboratories has rarely been possible. A

sizable factor of uncertainty must figure in any expert's findings. Moreover, differences in gradient, in orientation to the sun, or in precipitation and runoff create a mosaic of microenvironments even in contiguous lands, turning a one-size-fits-all approach to fire management into an impossible dream. When one of the West's great experts on forests, Thomas Veblen (who happens to be Thorstein Veblen's great-nephew!), declares that "we don't have sufficient knowledge to manage most sites, even if we agreed on the goal," the invitation to humility becomes compelling indeed.⁷

Wildland fire presents a prime opportunity to recalibrate the setting on humility and confidence. What are our actual powers? Where does confidence cross into hubris? And if humility needed more to recommend it, global climate change presents precisely that recommendation. Even as we explore the prospect of restoring natural fire to the West's forests, a changing climate makes it impossible to recapture the circumstances of the past,



COURTESY OF NATIONAL PARK SERVICE. PHOTO NUMBER 12834. PHOTO BY JIM PEACO

Although this photo was taken outside of Yellowstone National Park in 1988, it is an increasingly common sight in the wildland-urban interface: Firefighters spraying water over a business district because of an approaching fire.

leaving the concept of restoration floating free of an identifiable baseline, an original state to recapture and recreate. If there is anything left to the notion of the forests as a great laboratory, then climate change has made them a laboratory where someone keeps fiddling with the thermostat.

While we are recalibrating the capacity of human beings to redesign nature, we can also work on getting a better setting for the level of cynicism with which we respond to the proposed use of commercial logging to reduce the density and flammability of forests. How much legitimacy is there in the proposition that commercial harvesting of timber can reduce the likelihood of catastrophic wildland fire? Does commercial logging have to mean the cutting of big, mature trees while leaving the small trees and brush or the ladder fuels? Is there a smarter form of harvest, a way to use timber before it burns and adds carbon dioxide to the atmosphere, without impairing the next round of stand replacement? Unable to bring about a popular upsurge in the desire to whittle (described enthusiastically on Whittling: The Official Home Page as “a hobby for some, an obsession for others, a joy for all”),⁸ we struggle to find a use for small-diameter trees. Still, commercial cutting has some claim on a place in our tool kits. Rather than taking it as an axiom that making a profit is intrinsically a sign of treachery, deception, and sin, a tranquil exploration of market incentives would be a major step in relieving the burden now resting on federal budgets. The idea of getting rich by doing the right thing is not, finally, without precedent in history.

Over the past two centuries, in every aspect of the human relationship to nature, a trend of enormous consequence has been the disconnecting of choices from consequences. The cognitive misadventure summed up in the phrase “out of sight, out of mind” is the short-term joy of our lives and the long-term bane of our existence. In every feature of our lives, we rely on sources of supply that we cannot see and do not want to see. We see the lights go on in our homes, but we do not see the equipment that mines the coal, the train that transports the coal, the generating plant that burns the coal, or the transmission lines that move the electricity to our homes. If we could see all this, we might be momentarily bummed out, but at least we would know the consequences of our choices, a knowledge that is the prerequisite for a life of responsibility and foresight.

Every season of wildland fire reconnects choice and consequence, and does so with drama, visibility, and extensive media attention. Big fires are impossible to hide. Their smoke travels far and wide, as do the anxieties and fears of the people who have placed their houses in the line of fire. The nation is, at least for a moment, called to attention. Contemplating the fire-lit connection between choice and its consequence provides exactly the right conditioning exercise for twenty-first-century American souls.

For anyone who thinks that it is simply too late for historical lessons to be of any use, a recent article, “Potential for Future Development on Fire-Prone Lands,” should be required reading. In this article, Patricia Gude, Ray Rasker, and Jeff van den Noort present an inventory of the private lands in eleven western states bordering on public forests, land that is likely to be susceptible to wildland fire. “Only 14% of the available ‘wildland interface’ in the West is currently developed,” the authors found, “leaving great potential for home construction in the remaining 86%.”⁹ If we think firefighting costs now pose a burden on the federal agencies and the taxpayers, we have not—if the current patterns

continue—seen anything yet. What we decide to do with that remaining 86 percent of the western wildland interface will make a very clear statement of the degree to which we were or were not able to benefit from the lessons of history.

A hundred and fifty years ago, the West had a different but equally serious fire problem. Residents of newly founded towns harvested timber from local forests or sometimes simply imported ready-cut wooden houses for on-site assembly, and then jumbled these structures into the shape of a town, often with little or no preparation for emergency water supplies. The result was predictable: frequent, devastating urban fires, until people caught on to the pattern, shifted to less flammable building materials of brick and stone, created fire departments, and set up better systems for supplying water to the firefighters.

Imagine how mystifying this whole strange sequence of activity would have been, say, to a space alien, watching the American westward movement from a distant, stratospheric fire lookout post: A bunch of little creatures arrive; they cut down local trees and pile the wood up in big, eccentrically arranged stacks; and then, ritually, repetitively, they burn the stacks down in a grand conflagration.

Let us aspire to conduct that will make a little more sense, and make us seem just a little smarter, if not to space aliens, then at least to those who will have to live, for decades to come, with the consequences of our choices. □

Patricia Nelson Limerick is the chair of the board and faculty director of the Center of the American West at the University of Colorado.

NOTES

1. Roger G. Kennedy's *Wildfire and Americans: How to Save Lives, Property, and Your Tax Dollars* (New York: Hill & Wang, 2006) offers another prime example of a historian riding to the rescue, especially to ensure that the effort to derive historical lessons from the Cerro Grande–Los Alamos fire does not go astray into an unfortunate condemnation of all prescribed fire.
2. David Hackett Fischer, *Historians' Fallacies: Toward a Logic of Historical Thought* (New York: Harper & Row, 1970), 302.
3. Ralph Z. Hallow, “Wildfires Make a Burning Campaign Issue: Bush, Gore Stand-Ins Swap Charges over Who Is to Blame for Infernos,” *Washington Times*, August 28, 2000.
4. Thorstein Veblen, *The Theory of the Leisure Class* (1899; New York: Signet, 1953).
5. Matt Gouras, “USFS Says Firefighting May Take Half of Budget,” *Boulder Daily Camera*, August 26, 2008.
6. *Living with Fire: Protecting Communities and Restoring Forests: Findings and Recommendations of the Front Range Fuels Treatment Partnership Roundtable*, May 2006, 14.
7. Thomas Veblen, Geography Department, University of Colorado, at Center of the American West forum, “Facing Fire: Lessons from the Ashes,” February 16 and 17, 2001, at www.centerwest.org/projects/fire/index.php, 6. Veblen has done work of great consequence in identifying and describing the great variation in fire frequency and intensity at different elevations; see Thomas T. Veblen, *The Colorado Front Range: A Century of Ecological Change* (Salt Lake City: University of Utah Press, 1991).
8. Quote from www.whittling.com.
9. Patricia Gude, Ray Rasker, and Jeff van den Noort, “Potential for Future Development on Fire-Prone Lands,” *Journal of Forestry* (June 2008): 198.