

RESISTANCE, RESTORATION, RESILIENCE: A Survey of Fire's American Century

Stephen J. Pyne*

I. INTRODUCTION

America's modern fire era began with two parallel processes.¹ One was industrialization, which sought to replace open fire with internal combustion but also rewired humanity's power and redefined Americans' relationship to their natural surroundings. This transitional phase is typically one of unsettled fire regimes and widespread, even abusive, burning. The other process was the surge of settlement that swept over post-Civil War America. A map of forest fires for the 1880 census shows the outcome.² America in the 1880s was much like Brazil in the 1980s—an agricultural society, rapidly industrializing and remaking its national estate. Fires—both good and bad—were everywhere. America's first professional forester, the Prussian-trained Bernhard Fernow, dismissed the scene as one “of bad habits and loose morals.”³

The wreckage was widespread and visible. Occasionally, flames destroyed whole communities and left hundreds dead. John Muir voiced the sentiments of most progressive thinkers when he wrote, “[i]t is not generally known that, notwithstanding the immense quantities of timber cut every year for foreign and home markets and mines, from five to ten times as much is destroyed as is used, chiefly by running forest fires that only the federal government can stop.”⁴ In 1872 the U.S. created its first national park, Yellowstone, in large part to spare it “from fire and ax.”⁵ But the primary strategy involved state-sponsored forestry. This was a global project, characteristic of imperial Europe.⁶ Americans looked especially to Britain and British India for

* Regents' Professor and Distinguished Sustainability Scholar, School of Life Sciences, Arizona State University.

1. The standard history for American fire up to the 1970s is STEPHEN J. PYNE, *FIRE IN AMERICA: A CULTURAL HISTORY OF WILDLAND AND RURAL FIRE* (1982).

2. STEPHEN J. PYNE, *AMERICA'S FIRES: A HISTORICAL CONTEXT FOR POLICY AND PRACTICE* (2010).

3. ANDREW DENNY RODGERS III, *BERNHARD EDUARD FERNOW: A STORY OF NORTH AMERICAN FORESTRY* 167 (1968).

4. John Muir, *The American Forests*, 80 *ATLANTIC MONTHLY* 145, 154 (1897).

5. *About Us: History*, NAT'L PARK SERV., <http://www.nps.gov/aboutus/history.htm> (last visited Feb. 24, 2016).

6. PYNE, *supra* note 1, at 123–43.

examples. In 1891 Congress authorized the President to establish forest reserves;⁷ these received an organic act in 1897⁸ after a report by a Forest Commission under the National Academy of Sciences. Other reserved lands, such as wildfire refuges and national monuments, followed. Globally, foresters became the face of such reforms and the principal oracles on fire, which they hated and feared.⁹

In 1905, responsibility for the forest reserves was transferred to the Bureau of Forestry in the Department of Agriculture.¹⁰ The Bureau later became the U.S. Forest Service (“USFS”), and the reserves, the national forests.¹¹ In 1910, the fledgling agency faced two crises. One was political: in January the agency’s charismatic chief, Gifford Pinchot, was fired for insubordination.¹² The second was a wave of burning that summer, culminating in the 3.25-million acre Big Blowup that traumatized the agency.¹³ From its origins the Forest Service had committed to fire protection—it had the example of imperial forestry and professional forestry. After 1910 that stance hardened. Within the year Congress passed the Weeks Act which, among other provisions, established a system of federal-state cooperation focused on fire protection.¹⁴ Fire’s American century dates from that moment.

The subsequent story can be parsed many ways but perhaps the most useful is a simple narrative arc. For the next fifty years, the Forest Service became a fire hegemon, sought to exclude fire, and established a national infrastructure. Then, beginning in the 1960s, that arrangement disintegrated into a pluralism of policies and practices as agencies sought to restore good fire and the various parties tried to find ways to hold the proliferating pieces into a collective whole.

7. Forest Reserve Act of 1891, 16 U.S.C. § 471 (1891).

8. Forest Service Organic Administration Act of 1897, 16 U.S.C. § 551 (1897).

9. On the global context for fire and forestry, see STEPHEN J. PYNE, *VESTAL FIRE: AN ENVIRONMENTAL HISTORY, TOLD THROUGH FIRE, OF EUROPE AND EUROPE’S ENCOUNTER WITH THE WORLD* 480–99 (1997).

10. U.S. DEP’T OF AGRIC., *THE U.S. FOREST SERVICE—AN OVERVIEW* 2, http://www.fs.fed.us/documents/USFS_An_Overview_0106MJS.pdf (last visited Feb. 24, 2016) (“The Transfer Act of 1905 transfers the management of forest reserves from the General Land Office (within the Department of the Interior) to the Bureau of Forestry (within the Department of Agriculture).”).

11. *Id.*

12. *1909: Ballinger-Pinchot Scandal Erupts*, HISTORY (Nov. 13, 2009), <http://www.history.com/this-day-in-history/ballinger-pinchot-scandal-erupts>.

13. *The 1910 Fires*, FOREST HIST. SOC’Y, <http://www.foresthistory.org/ASPNET/Policy/Fire/FamousFires/1910Fires.aspx> (last visited Mar. 4, 2016). The best survey of the 1910 fires and their consequences is STEPHEN J. PYNE, *YEAR OF THE FIRES: THE STORY OF THE GREAT FIRES OF 1910* (2001). A more recent, popular version is TIMOTHY EGAN, *THE BIG BURN: TEDDY ROOSEVELT AND THE FIRE THAT SAVED AMERICA* (2009).

14. Weeks Act of 1911, Pub. L. No. 61-435, Ch. 288, 36 Stat. 961 (1911).

II. CREATING A NATIONAL INFRASTRUCTURE—THE U.S. FOREST SERVICE AS HEGEMON

Among the aftershocks of the 1910 fire season was a public debate, centered in California, over fire policy.¹⁵ One side argued that fire suppression was misguided and that the proper strategy was to “light burn” the montane forests as the Indians had.¹⁶ The other side, anchored in academic (and European) forestry and in the U.S. Forest Service, campaigned for aggressive fire control.¹⁷ The light-burning controversy, as it became known, continued until a special commission condemned the concept in 1923.¹⁸ Light burning became anathema, dismissed as “Paiute forestry,” and, because it questioned forestry, was seen as a political challenge to state-sponsored conservation overall.¹⁹ Subsequently, light burning—reincarnated as prescribed fire—retreated to the southeast, rooting with particular tenacity in Florida.²⁰

A rival strategy emerged from a 1911 study by Coert duBois, who soon headed the Forest Service in California. A revised version was published in 1914 as *Systematic Fire Protection in the California Forests*.²¹ The duBois schema became the basis for formal planning by the USFS. A generation of future chief foresters, traumatized by the Big Blowup, determined never again to allow such a crisis on their watch.

So, with systematic fire protection as a blueprint, international forestry as an authority, the Forest Service as a political power, and the Weeks Act as a means to transfer federal standards to the states, fire exclusion became a serious project. In 1924 the Clarke-McNary Act expanded the number of states who could participate.²² In 1927, in what was presented as a move for government efficiency, the federal agencies involved with fire were linked in Forest Protection Board to establish common policy and procedures.²³ In practice, this meant the Forest Service could extend its model throughout the

15. Michelle Nijuis, *How Fire, Once a Friend of Forests, Became a Destroyer*, NAT'L GEOGRAPHIC (Nov. 22, 2015), <http://news.nationalgeographic.com/2015/11/151122-wildfire-forest-service-firefighting-history-pyne-climate-ngbooktalk/>. For the best account of the light burning controversy, see PYNE, *supra* note 1, at 100–19.

16. Nijuis, *supra* note 15.

17. *Id.*

18. PYNE, *supra* note 1, at 108–09.

19. Nijuis, *supra* note 15.

20. See STEPHEN J. PYNE, *TO THE LAST SMOKE: FLORIDA* (2016).

21. COERT DUBOIS, *SYSTEMATIC FIRE PROTECTION IN THE CALIFORNIA FORESTS* (1914), <https://archive.org/details/systematicfirep00servgoog>.

22. Clarke-McNary Act, 43 Stat. 653 (1924) (codified at 16 U.S.C. §§ 505, 568–570).

23. RICHARD WEST SELLARS, *PRESERVING NATURE IN THE NATIONAL PARKS: A HISTORY* 83 (1997), <http://www.georgewright.org/sellars.pdf>.

public domain. That same year, the McSweeney-McNary Act identified the Forest Service as the sole source of federal research into fire.²⁴ More and more of the wildland fire establishment fell under Forest Service control. Still, the means at hand fell laughably short of what policy declared as an end. Systematic fire protection was limited to the frontcountry.²⁵

That changed with the New Deal. President Roosevelt was personally attracted to forestry; his administration linked economic and social rehabilitation under a common aegis. Emergency conservation programs, the Works Progress Administration, and especially the Civilian Conservation Corps (“CCC”) granted the means the Forest Service required to extend fire protection into the backcountry. A national infrastructure appeared almost overnight. In 1935, Chief Forester Gus Silcox, a veteran of the Big Blowup, announced what became known as the “10 a.m. policy,” which stipulated as a universal goal the control of every fire by 10 a.m. the day following its report.²⁶ With the 10 a.m. policy as an administrative standard and with the CCC to supply the necessary muscle, fire suppression became a serious force in the nation’s wildlands, both those degraded by abusive burning and those that still depended on good fire for their ecological integrity.

The CCC ended in World War II. The war years, however, redefined fire protection as national defense, and the postwar years as part of a national security state. The first national fire prevention programs grew out of wartime alarms, leading to the invention of the Smokey Bear program in 1944.²⁷ Its reduced resources led the Forest Service to allow prescribed fire on its Florida holdings in 1943, but otherwise the sense of hostile fire strengthened.²⁸ Fire again militarized.

The real shift came in the postwar era. War surplus equipment, to which the Forest Service and its state cooperators had priority access, replaced the massed manpower of the CCC and reinforced a sense that fire was an enemy to be fought. Fire protection merged with civil defense. Fire research, too,

24. McSweeney-McNary Act, 16 U.S.C. § 581a, 581b-581i (1928) (repealed 1978).

25. A useful guide to the major Forest Service legislation is U.S. FOREST SERV., THE PRINCIPAL LAWS RELATING TO FOREST SERVICE ACTIVITIES: AGRICULTURE HANDBOOK NO. 453 (1993).

26. PYNE, *supra* note 1, at 113; PYNE, *supra* note 13; *see also* U.S. Forest Service Fire Suppression, FOREST HIST. SOC’Y, <http://www.foresthistory.org/ASPNET/Policy/Fire/Suppression/Suppression.aspx> (last visited Mar. 10, 2016).

27. Campaign History, SMOKEY BEAR, http://www.smokeybear.com/vault/history_main.asp (last visited Mar. 10, 2016); *see also* The Story of Smokey: Orphan Bear, SMOKEY BEAR, http://www.smokeybear.com/vault/story_main.asp (last visited Mar. 10, 2016) (describing how an orphaned cub found after a 1950 fire became Little Smokey).

28. PYNE, *supra* note 1, at 261; PYNE, *supra* note 20.

adopted a war-mobilization model and became involved with nuclear bomb tests and an National Academy of Sciences-National Research Council Committee on Fire Research;²⁹ extra monies encouraged fire labs. In 1955, the Reciprocal Protection Act authorized the USFS to assist with fire emergencies in any jurisdiction, even without formal mutual-aid agreements.³⁰ Soon afterwards the Forest Service was assigned responsibility for rural fire defense planning. In the 1960s the scheme was even floated for a national fire plan.

In 1960 the U.S. Forest Service was a hegemon. It seemed to be close to succeeding in its historic mission to establish a fire infrastructure across the country. It had—by far—the bulk of fire resources, from crews and engines to research facilities. What it did not directly control, it shaped through various cooperative programs that bonded it with the states. It determined policy. It had the heft of academic forestry to bolster its claim for moral authority, as the adjudicator of American public lands. Burned area had dropped. Fire consumed roughly 13% of the agency's budget. In that year Herbert Kaufman, in a classic case study in public administration, identified it as a model agency, not least because its workforce and its ambitions had melded.³¹ For American fire the Forest Service was the indispensable institution.³²

III. THE FIRE REVOLUTION

Then the wheels came off. A civil society emerged to challenge a suppression-only policy and the sense that fire was a government monopoly. For example, the privately endowed Tall Timbers Research Station staged its inaugural fire ecology conference in 1962,³³ the same year the Nature Conservancy conducted its first burn.³⁴ An environmental movement challenged the authority of forestry as a source of values, the validity of multiple use as a land management principle, and the legitimacy of agencies to self-regulate their practices. By 1976, every federal land agency had its organic act rechartered or issued for the first time. The 1964 Wilderness Act

29. LYNN EDEN, *WHOLE WORLD ON FIRE: ORGANIZATIONS, KNOWLEDGE, AND NUCLEAR WEAPONS DEVASTATION* 194 (2006).

30. 42 U.S.C. § 1856 (2006).

31. HERBERT KAUFMAN, *THE FOREST RANGER: A STUDY IN ADMINISTRATIVE BEHAVIOR* xii (1960).

32. *Id.*

33. *Tall Timbers Fire Ecology Conferences*, TALL TIMBERS, <http://talltimbers.org/tall-timbers-fire-ecology-conferences/> (last visited Mar. 10, 2016).

34. *Our History*, NATURE CONSERVANCY, <http://www.nature.org/about-us/vision-mission/history/> (last visited Mar. 10, 2016).

inaugurated an era in which special-interest lands would replace generic, multiple-use lands.³⁵ The Act had the added quirk that Congress did not create a Wilderness Service to manage the new category of lands but left their administration to existing agencies, which meant those agencies had to reconcile a new (and often absolutist) style of land management with their traditional practices.³⁶ The Civil Rights Act and new immigration laws heralded a mass overturning of the workforce. In sum, these changes added up to a fire revolution.³⁷

The revolt in the provinces became a revolution from above. The National Park Service broke ranks on its suppression-only (10 a.m.) policy in 1968, then consolidated its experiences into a national manual for fire planning, NPS-18, in 1978.³⁸ The Forest Service loosened the 10 a.m. policy in 1967, allowed for natural fires in 1972, converted Fire Control into Fire Management in 1973, and reformed its policy, financing, and institutional setting in 1978.³⁹ Meanwhile, interagency institutions evolved to replace the singular role of the USFS. The Boise Interagency Fire Center opened in 1969 to support cooperative firefighting; total mobility as a doctrine was proposed in 1973 to promote shared standards; and the National Wildfire Coordinating Group was chartered in 1976 to create those standards by consensus.⁴⁰ At the time, progress seemed painfully slow; in retrospect, reforms advanced steadily and briskly. It all happened amidst bipartisan enthusiasm for environmental matters and amid political turmoil that saw both the president and vice president of the United States resign from office. By 1978, however, the American fire community accepted a policy of fire by prescription and completed a reformation that critics twenty years earlier would have declared impossible.

Then progress stalled. The weather turned wet. The Reagan administration pushed back against environmental reforms, politics became partisan, and civilian agencies suffered relative to the military. Hostility toward the Wilderness Act only deflected environmentalists' energies toward the Endangered Species Act,⁴¹ a far less controllable process. Fire research nearly imploded. The workforce declined in numbers, became subject to

35. 16 U.S.C. §§ 1131–1136 (1964).

36. *Id.*

37. The best summary of the fire revolution and its aftermath is STEPHEN J. PYNE, *BETWEEN TWO FIRES: A FIRE HISTORY OF CONTEMPORARY AMERICA* (2015). A lively survey of the early years and its prophets is DAVID CARLE, *BURNING QUESTIONS: AMERICA'S FIGHT WITH NATURE'S FIRES* (2002).

38. PYNE, *supra* note 37, at 140–42.

39. *Id.* at 162–69.

40. *Id.* at 109, 205.

41. 16 U.S.C. §§ 1531–1544 (2015).

affirmative-action imposed quotas, and, when the administration accelerated commodity production on the national forests, even split into internal schisms. Both American land and American society went from a melting pot to a mosaic of special interests and peoples. In the mid-1980s, the idea of a wildland-urban interface was floated.⁴² The public domain would increasingly polarize between the wild and the urban, with working middle landscapes abraded away.

A flood tide had carried the fire revolution forward. The ensuing ebb tide left it stranded. Ideas failed to become practices. Some agencies weathered the period well; the National Park Service and the Fish and Wildlife Service became, in effect, gated communities. The primary stresses fell on the Forest Service. It could no longer bond the American fire community together; increasingly, it could not even hold itself together. No surrogate evolved to replace it. Then the climate turned dry, and in 1988 the public learned about the fire revolution through large fires that burned for weeks in Yellowstone National Park.⁴³ For the first time the Government Accountability Office (“GAO”) was directed to inquire about fire policy.⁴⁴ Another power (to review its own operations) once held by the fire community was now ceded to outside agencies. The GAO joined the Environmental Protection Agency (“EPA”), and later, the Occupational Safety and Health Administration (“OSHA”) as outside auditors.⁴⁵

The aftermath of the 1988 season yielded to a period of stabilization and regrouping. The advent of the Clinton Administration, particularly the enthusiasms of Interior Secretary Bruce Babbitt, led to a revival of reforms (call it Revolution 2.0). The Forest Service tried to reorganize around the doctrine of ecosystem management. The consent decree stabilized the upheaval in the workforce, although hiring to meet affirmative action goals were often replaced by hiring “-ologists” to help meet National Environmental Policy Act (“NEPA”) plans. Norman Maclean’s posthumously published *Young Men and Fire* further engaged the public.⁴⁶ Unhealthy forests became the flip-side of exurban sprawl. The catalyst for

42. William T. Sommers, *The Emergence of the Wildland-Urban Interface Concept*, FOREST HIST. TODAY, Fall 2008, at 12, 12–14, <http://www.foresthistory.org/publications/FHT/FHTFall2008/Sommers.pdf>.

43. PYNE, *supra* note 37, at 249.

44. *Id.*; see also *Wildland Fire Management*, U.S. GOV’T ACCOUNTABILITY OFF., http://www.gao.gov/key_issues/wildland_fire_management/issue_summary (last visited Mar. 10, 2016).

45. The literature on the Yellowstone fires is large; see D. DESPAIN ET AL., INT’L ASS’M WILDLAND FIRE, A BIBLIOGRAPHY AND DIRECTORY OF THE YELLOWSTONE FIRES OF 1988 (1995) for an introduction.

46. NORMAN MACLEAN, *YOUNG MEN AND FIRE* (1992).

Revolution 2.0, however, was the 1994 fire season, most notably the South Canyon tragedy.⁴⁷ The sense grew within the fire community that suppression was broken. OSHA cited the agencies for safety violations.⁴⁸

A decade of celebrity fires—nearly all coinciding with election years—kept fire before Congress and the public. In 1998 a quiet reorganization helped consolidate the new efforts. Secretary Babbitt announced that the country was experiencing a “national fire crisis.”⁴⁹ The 2000 fire season seemed to validate that pronouncement. Large fires rambled across the Northern Rockies, while a botched prescribed burn at Bandelier National Monument blew into Los Alamos and became the largest recorded fire to date in New Mexico.⁵⁰ The surge culminated in the National Fire Plan.⁵¹

What followed was an era of megafires, megafire analysis, and megabucks. More and more, big fires accounted for most of the damages and costs (they were the 1% of nature’s fire economy). So many groups issued so many reports that it seemed wildland fire had become the domain of MBAs more than engine captains. And as it did with wars, the Bush Administration and Congress wanted firefights without the bother of paying for them. Transfer payments claimed over 40% of the Forest Service budget;⁵² what big fires were doing on the landscape, they were doing to agencies. More institutions crowded onto the stage. The wildland-urban interface intensified to the point of becoming a counterrevolution. Modest efforts to upgrade failed to keep pace with the worsening scene. It would take another change of administrations to rekindle reform. If climate change was helping drive firescapes, a change in the climate of opinion was needed to counter it. The 2007 season set new records; the western fire scene even seemed to migrate into the southeast.

47. On the South Canyon fire and some of its consequences, see JOHN MACLEAN, *FIRE ON THE MOUNTAIN: THE TRUE STORY OF THE SOUTH CANYON FIRE* (1999).

48. On policy reforms, see U.S. DEP’T OF AGRIC. & U.S. DEP’T OF THE INTERIOR, *FEDERAL WILDLAND FIRE MANAGEMENT: POLICY AND PROGRAM REVIEW* (1995), https://www.forestsandrangelands.gov/strategy/documents/foundational/1995_fed_wildland_fire_policy_program_report.pdf.

49. PYNE, *supra* note 37, at 290.

50. *Id.* at 452–53.

51. Perhaps the most useful commentary on the evolving events are the serial reports from the Government Accountability Office. The GAO first entered the field after the 1988 fires. It issued a summary of its activities as in *Wildland Fire Management: Hearing Before the H. Subcomm. on Interior & Env’t & H. Comm. on Appropriations* (2009) (statement of Robin M. Nazzaro, Director Natural Resources & Env’t, GAO), <http://www.gao.gov/assets/130/122191.pdf>.

52. PYNE, *supra* note 37, at 7; see also U.S. FOREST SERV., *THE RISING COST OF WILDFIRE OPERATIONS* 6 (2015), <http://www.fs.fed.us/sites/default/files/2015-Fire-Budget-Report.pdf> (stating that in 2015, the cost of wildland fire management consumed 52% of the Forest Service budget).

Another crest of reforms arrived in 2008–2009 with new guidelines for appropriate management response, with the Federal Land Assistance, Management, and Enhancement (“FLAME”) Act,⁵³ and with the start of the National Cohesive Strategy project.⁵⁴ Fire protection demanded integration beyond interagency scales to embrace intergovernmental (and even non-governmental) ones. Ominously, the fire scene continued to push eastward. In 2011, after a decade of serial conflagrations, big fires slammed Texas and put into national prominence a place that had seemed outside the national narrative.⁵⁵ The overall workforce both expanded to include state and local fire departments and shrank in terms of dedicated public servants. The evolution of fire’s community resembled that of America’s military, moving from broad based militia to an all-volunteer force increasingly supplemented by private-sector services (what critics labeled a fire-industrial complex).

The 2013 season became a rolling thunder of media attention, with hundreds of houses incinerated outside Colorado Springs, the Granite Mountain Hotshots burned over on Yarnell Hill, and the Rim fire rambling across Yosemite.⁵⁶ The Forest Service was being fingered as the epitome of dysfunctional democratic government. Reforms were failing to match threat with response. Probably the next advance will require a change in generations as much as a change in policy.

IV. CONCLUSION

A stripped-down version of American fire history divides roughly into fifty-year rhythms. In the language of landscape ecology, the U.S. spent fifty years after the trauma of the 1910 fires committed to resistance—stopping the threat of fire at its source. It then spent fifty years trying to restore fire—trying to reinstate good fire—with mixed results. Now it seems to be entering an era of resilience, an admission that remediation measures have come too late and on too small a scale to affect the outcome except in particular places. Costs and safety for both the public and firefighters have become the primary considerations of fire suppression, though the rules of engagement remain

53. 43 U.S.C. § 1748 (2009).

54. See U.S. DEP’T OF AGRIC. & U.S. DEP’T OF THE INTERIOR, THE NATIONAL STRATEGY: THE FINAL PHASE IN THE DEVELOPMENT OF THE NATIONAL COHESIVE WILDLAND FIRE MANAGEMENT STRATEGY (2014), <https://www.forestsandrangelands.gov/strategy/documents/strategy/CSPPhaseIIINationalStrategyApr2014.pdf>.

55. Climate modelers suggested the fire scene would continue to migrate eastward.

56. PYNE, *supra* note 37, at 451.

murky. Fire managers will have to accept what is coming at them and try to cope as best they can.⁵⁷

These three historical eras underwrite the three general strategies in play today.

A. *Resistance*

The resistance strategy has its proponents. There remains an Old Guard from the 1960s who would like a return to the former order. More progressively, there are thinkers who want to transform wildland fire organizations into an all-hazard emergency service—effectively urban fire departments in the woods—or at a national level, a kind of Coast Guard for the interior.

The move toward an all-purpose emergency service is happening globally, motivated by desires to protect structures and lives. Evidence to date suggests that such a revival of suppression or a repurposing from fire as part of land management to fire as an emergency response can help attend to a threatened public, but it is expensive and has not shown it can manage fire because it breaks the bond between fire management and land management. It makes sense if the primary land use is urban sprawl. If it retains the strengths of fire suppression, it also retains suppression's formidable weaknesses as a singular strategy.

B. *Restoration*

Restoration remains an inspirational goal for many practitioners, either to return to a golden age in the past or to advance toward one in the future. Its motivation is a near-universal unhappiness with the existing scene. But restoration, too, has upgraded its mission. It now includes complex collaborations; ways to supplement prescribed fire with other treatments; programs on a landscape scale; and a determination to get ahead of the problem. It seeks to gather and apply the best science in order to restructure the national estate in such a way that we can control bad fires and reintroduce good fires more easily, cheaply, and safely.

There are many projects actively underway. Yet if the vision of fire restored still shines brightly, so, too, its problems continue to darken. It has proved costly, not only in money but in political and social capital. Research, reviews, NEPA protocols, endless conversations among stakeholders—these

57. My conclusion follows testimony submitted to the U.S. Senate Committee on Energy and Natural Resources for its hearing on fire policy held on May 4, 2015.

are a necessary exercise in democracy but can take years. Moreover, the actual area involved is small relative to the size of the challenge. The threats are growing bigger and faster than our responses. We need flexibility to operate on landscape scales, not only geographically but institutionally. We need to move beyond single projects and events. There is little reason to believe that the country will muster the will to rehabilitate at the rate or scale required the 39–58 (or by some estimates 120) million acres believed to be out of whack.⁵⁸

C. Resilience

In the West a strategy is emerging that accepts, in fact if not in doctrine, that we are unlikely to get ahead of the problems coming at us. Instead, it allows for the management of wildland fires to shift, where possible, from attempts at direct control to more indirect reliance on confining and containing outbreaks. Of course there are fires that simply bolt away from the moment of ignition. But many fires offer opportunities to back off and burn out. It is hoped that this strategy will prove more cost effective and safer for fire crews, while introducing some degree of semi-controlled ecological burning. These are not let-burns. Rather, fire officers concentrate their efforts at point protection where assets are most valuable such as communities, municipal watersheds, or sequoia groves. Elsewhere they will try to pick places—draw boxes—which they can hold with minimum costs, risks, and damages. A given fire might see aggressive firefighting on one flank, or on one day, and a more removed burning out on another flank or at another time.

The strategy is compatible with federal policy, and in many respects moves in directions long urged by critics and even the GAO, though it can look like a mashup and the outcomes will be mixed. Some patches will burn more severely than we would like (maybe 15–20% of the total), and some will barely burn at all (another 15–20%), but the rest will likely burn within a range of tolerance. Such burnouts may well be the future of prescribed fire in the West. If so we need to do them better, and we need to understand how to build future landscapes out of the patchy aftermath of the megafires that characterize the current regime.

Equally, we need a reordering of the institutional landscape. In political terms we are witnessing the American fire community's euro moment. We either truly integrate, or we break up, or we tolerate endless bailouts. The

58. PYNE, *supra* note 37, at 367; *Restoring America's Forests*, NATURE CONSERVANCY, <http://www.nature.org/ourinitiatives/habitats/forests/restoring-americas-forests.xml> (last visited Mar. 2, 2016) (estimating that the restoration backlog is 120 million acres).

National Cohesive Strategy could become the start of a kind of fire constitution that redefines for our federal system the roles, rights, and responsibilities of the many, many players in the American way of fire. It could do for the future what the Weeks Act did after the Big Blowup.

So, three strategies. It is worth pointing out that all fire strategies suffer failures and at roughly the same rate. Some 2–3% of wildfires escape initial attack. Crude estimates suggest a comparable number of prescribed fires escape or fail to do the ecological work expected. And we can expect similar breakdowns with landscape restoration.

Without wishing to sound flip or push an analogy too closely, we might call the resistance strategy a rock, the restoration strategy a scissors, and the resilience strategy a paper. At any given time and place one trumps another and is itself trumped. All three remain in play, and all three are needed. We need rocks around our prize assets and communities when they are threatened by going fires. We need scissors to buffer against bad burns and nudge toward good ones as part of managing healthy land. And we need paper because the ideal can be the enemy of the good, and a mixed strategy that includes boxing-and-burning may be the best we can hope for.