

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/227654217>

# Pyromancy: Reading Stories in the Flames

Article in *Conservation Biology* · August 2004

DOI: 10.1111/j.1523-1739.2004.00490.x

---

CITATIONS

24

---

READS

140

1 author:



**Stephen Pyne**

Arizona State University

86 PUBLICATIONS 4,376 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Fire as an Earth System Process [View project](#)

---

# Pyromancy: Reading Stories in the Flames

STEPHEN J. PYNE

Biology and Society Program, School of Life Sciences, Arizona State University, P.O. Box 874701, Tempe, AZ 85287, U.S.A.

---

**Abstract:** *A consensus history of fire in the United States has emerged over the past decade. It correctly identifies fire suppression's liabilities, while probably over-enthusiasing about fire-science capabilities. What it lacks, however, is a context of the subject's larger, braided narratives. There is, first, the grand story of fire on Earth. Quite apart from active suppression, open fire is disappearing in competition with industrial combustion. Second, there is the peculiar narrative of the public lands, the prime domain for wildland fires. These lands, and the institutions for their management, are rapidly changing. They began as "imperial" institutions, but now are devolving, privatizing, and otherwise decolonizing. Fire will change with those reforms. Third, there is a national narrative, currently obsessed with the collision of the wild and the exurban. This will probably pass within 5–6 years. Finally, there is the evolving narrative of how we imagine fire. We need a truly biological theory of fire, one in which we can flourish as unique fire creatures.*

Piromancia: Leyendo Historias en las Llamas

**Resumen:** *En la última década ha emergido una historia consensuada del fuego en Estados Unidos. Esta identifica correctamente los riesgos de la supresión del fuego y, probablemente, sobreestima las capacidades de la ciencia de fuego. De lo que carece, sin embargo, es el contexto de aspectos más amplios y entrelazados del tema. En primer lugar, se encuentra la magnífica historia del fuego en la Tierra. Más allá de la supresión activa, el fuego abierto está desapareciendo por competencia con la combustión industrial. En segundo lugar, se encuentran las cuestiones relacionadas con las tierras públicas en particular, donde ocurren principalmente los fuegos no controlados. Estas tierras, y las instituciones que las administran, están cambiando rápidamente. Comenzaron como instituciones "imperiales," pero ahora están delegando, privatizando y descolonizando estas tierras de una manera u otra. El fuego cambiará con esas reformas. En tercer lugar, está la problemática a nivel nacional, actualmente obsesionada con el choque de lo silvestre y lo exurbano. Es probable que ésta se supere en los próximos 5-6 años. En último lugar, existe la problemática de cómo imaginamos el fuego. Nos hace falta una teoría verdaderamente biológica del fuego, una en la que podamos florecer como criaturas de fuego únicas.*

---

## Introduction: Kindling a Story

Over the past decade a consensus version has emerged about what America's experience with fire has been. It tells how fire had been a natural feature in North America, and how in some ways—perhaps minor, maybe massive—pre-Columbian peoples altered those aboriginal conditions by their own burning practices. European settlement upset any natural patterns by adding fire, removing fire, and rearranging fuels. The creation of public lands attempted to halt the havoc, but early administrators did

not understand the true significance of fire and mistakenly sought to exclude it. The 1910 fires catalyzed a national mobilization led by the U.S. Department of Agriculture Forest Service (USFS)—a campaign to battle fire to the death. The New Deal granted this agenda enormous resources, particularly the Civilian Conservation Corps. Then a world war and a cold war kneaded national security considerations (and Smokey Bear) into the mix until, by the mid-1960s, protest blossomed into a fire counter-culture that viewed the war on fire rather like the war in Vietnam.

The full costs of fire suppression—economic and ecological—became increasingly apparent and progressively unacceptable. Besides, the Wilderness Act forced agencies to confront the unblinking absurdity of

---

*Paper submitted October 28, 2003; revised manuscript accepted December 16, 2003.*

excluding a natural process from natural areas. Led by the National Park Service, the federal agencies began revising their policies to accommodate fire—lightning fire where possible—and prescribing fire where a purely natural regime was denied. The USFS followed a decade later. The South Canyon fire of 1994 added dead firefighters to the litany of fire suppression's unintended, awful consequences. In 1995 all the federal agencies accepted a policy that sought to control the fires we do not want and promote those we do. In policy and philosophy, the agencies became deeply committed to fire's management, not its suppression. But distressingly little happened on the ground. The reason, it was argued, was a lack of public understanding, waffling administrators, and a gut-wrenching scarcity of funds.

The 2000 fire season provided a climax to this saga. It seemed we could not suppress wildfires and, in two spectacular instances, could not kindle prescribed burns without losing control. We could neither fight fires nor light them. Meanwhile, combustibles had become stockpiled like toxic waste, and a flood of exurbanites, eager to build in the backcountry, wretchedly complicated the scene by scrambling homes and wildlands into an ecological omelet. It was a bull market for burning. The narrative ends in a Wagnerian finale, to which the 2002 season added a staggering coda, and to which California contributed a fiery curtain call with its October 2003 conflagrations.

This narrative includes an interlinear text that tells the sad saga of fire science. From the onset, real science had been ignored, or compromised by politics. For a while the USFS shamefully suppressed even research from its own field stations that suggested fire served legitimate ecological purposes or that might question the moral clarity of fire suppression. Foresters closed ranks, and this mattered enormously because the USFS controlled virtually all federal funding for fire research. Still, dissidents arose. Many of the early critics came from wildlife biology or range management; later, forestry found its own voices. Herbert Stoddard, E. V. Komarek, Harold Biswell, Harold Weaver—these have become revered names—were some of the brave scientists who dared to challenge the establishment, crying out quite literally in the wilderness, warning that fire suppression was self-defeating and ecologically mad. The Tall Timbers Fire Ecology Conferences, begun in 1962, became a major forum for an alternative vision of fire, happily coinciding with more sophisticated models of ecology that found value in regular disturbances. Eventually the weight of scientific knowledge forced the political power structure to bend. The process continues, though compromised: too many politicians remain hostile to conservation, few members of the public have heeded the fire prophets, serious science remains starved for funding, and politicians still refuse to accept a fully science-based solution to wildland fire. Had federal administrators only listened to their scien-

tists, had they staffed research adequately and founded policy on natural science, we would not have today's crisis.

## Four Narratives in the Flames

Stories are written to a purpose, like parables to a moral. This one is no exception. The prevailing narrative of wildland fires seems written to reinforce the consensus that fire is inevitable because it is natural, that fire is necessary because it is useful, that we require more fire (and less logging), and that policy simply, unequivocally must be science based. In brief, it sustains the prevailing beliefs of most of the American fire community.

But is it incorrect? Not exactly; the difficulty is that it is simplistic in ways that may make reform more difficult and that, by being canonical, it tends to exclude all other stories. The fire scene in the western United States is not the outcome of misapplied science and misguided policy. It is the sum of all we have done and not done over the past century. There is a good case to be made that policy, however informed, cannot undo that legacy. The story identifies protest with a small clique of prophets from fire's Old Testament era. Dissent today mostly means recycling their jeremiads. The narrative focuses almost exclusively on public lands, when most fires lay outside them, along with much of the country's ecological restoration work. It ignores the deeper forces of fire history. And its story line—that science can and should drive policy—goes beyond naiveté into delusion. Fire synthesizes its surroundings. Those surroundings are cultural as much as natural, and choices about fire practices and regimes will inevitably be made on the basis of social values and philosophies, as integrated by political institutions. Science can enlighten that process but will not determine it. Instead of a dominant narrative, we need a suite of stories, a braiding of several narratives. In particular, I suggest four of special merit.

### A Fire Narrative

The combustion of fossil biomass is fundamentally restructuring the ecology of fire on Earth. The medium is humanity, which is devising other means to do what open burning had done. These other means have removed flame everywhere, from lawns to landscapes. This pyric transformation seems to undergo a demographic transition similar to that for people, such that the population of fires swells as old practices continue and new ignitions and fuels appear. This creates a sense of alarm among officials and elites over abusive burning. Then, by a process of substitution and suppression, the old ways cease, and the population of fires plunges below replacement level. Thus, developing countries have too much fire and developed ones too little. We poorly appreciate the pervasive

range of industrial fire's reach, even as the planet is dividing into two grand combustion regimes, one burning living biomass and the other burning fossil biomass. The ecology of this process is scarcely understood and barely recognized outside its contribution to global warming. But this is the deep driver of contemporary fire dynamics and the principal reason why fire continues to vanish from the land.

### **An Imperial Narrative**

The perception is that America's "fire problem" resides in its public lands. These are a recent invention and a novel habitat for free-burning flame. They exist because, during colonization, indigenous peoples were removed and, before permanent settlement could replace them, various political philosophies convinced the federal government to reserve these places as a permanent public domain. Not accidentally, the globe's other "fire powers," such as Australia, Canada, and Russia, experienced a similar history. Possessing those lands committed the state to administer them and to fund research.

The last 50 years, however, has been an era of decolonization. The future of public lands will be one of devolution, institutional fragmentation, redefinition, even privatization. In particular, we are closing the life cycle of state-sponsored forestry as a device for national (or imperial) management. When this happens, as it has in New Zealand and South Africa, open burning struggles to survive and scientific funding dries up. But the obsession with public lands also diverts attention and monies from the larger panorama of private lands and institutions. Federal research funds go to fire on the federal lands. Paradoxically, it may be that the most successful administrator of prescribed fire in the United States is The Nature Conservancy, in good part because it can identify specific targets on private lands. A narrative that focuses exclusively on the public domain will miss this evolution. That The Nature Conservancy is now becoming a major presence in public wildlands (as, for example, with the Fire Learning Network) speaks volumes for the changing institutional structure and political economy of fire management.

### **A National Narrative**

The fire story is global, and the public lands story involves a small club of European-colonized countries; America shares the imperial and the national narratives. But there is also a peculiarly American story that involves exfoliation of particular problem fires and practices. It culminates in today's reigning fire problem—the ugly-named "wildland-urban interface" that is more aptly characterized as an intermix. This circumstance, however, follows from a general demographic migration of considerable depth. We are recolonizing once-rural America with emigrant urbanites. The sprawl is not restricted to the West and its public-land "interfaces": it is everywhere,

mostly amid previously agricultural landscapes. The West, though, has a fire climate that makes free-burning flame an inevitable presence. These problem-defined phases seem to last about 20 years, and my reading of the scene is that we have crossed the midpoint, that the crest of the wave will pass during the next 5–6 years, that the public has absorbed the message about the hazards of the wildland-urban interface, that the problem is amenable to technical solutions (in ways that wilderness fire, for example, is not), that the main dangers will hover over those scrambled communities erected during the previous 30 years, and that we ought to begin thinking about fire's next new thing.

That next phase will probably involve grappling with those generic public lands that have become excessively prone to fire. For such places, four strategies exist: leave it to nature, try to suppress fire, do the burning yourself, or change the combustibility of the landscape so that fire of any kind will burn in more favorable ways. "Changing combustibility" can mean many things, including raking pine needles away from a house, flattening brush, thinning dense stands of reproduction, reestablishing grasses into woods that have lost them, or eradicating grasses (like cheatgrass) from landscapes they have invaded.

None of these strategies works by itself. We cannot cut our way out of the problem. We cannot burn our way out. We cannot suppress. And we cannot walk away. We need to mix and match treatments—a fire cocktail—always adjusted to particular sites. Still, even such suites of practices demand social consensus on what we want those lands to be. Social opinion is not as easily pruned as an overgrown forest, however, and political maneuvering is not as readily manipulated as a drip torch or pulaski. Worse, fire is not listening to our whining, rhetorical windiness, and data presentations. It speaks a language of wind, fuel, drought, and terrain, and it will ignore anything that does not translate its conceptions into such media.

### **A Narrative of Fire Imaginings**

Our conception of fire is dangerously narrow. We think of it as a mechanical tool like an ax, when it more often resembles a domesticated species like a sheep dog or a captured ecological process like a grizzly bear trained to dance. We think of it as natural, when it is humanity that, by seizing the torch from lightning, brought fire more completely within the circle of life and accounts for the real-world geography of burning on the planet. We forget the fact that wilderness areas are themselves, paradoxically, human institutions. We fail to discriminate among the various drivers of fire history, confusing that which policy might correct with the forces that stand outside its script. We promote policies, for example, that seek to introduce more fire when all the thrust of industrial combustion is to snuff it out. We have not sufficiently

imagined fire as a truly biological phenomenon. Life furnishes its oxygen, life provides its fuel, life—in the form of humanity—directs most of its ignitions. Flame functions as a kind of ecological catalyst not easily rendered into mechanical models of cause and effect, nor is it amenable to treatments restricted to starting and stopping ignition or shoving biomass around.

### Seeing Ourselves in the Flames

We have not reimagined ourselves as the fire creatures we are. Other species knock over trees, dig holes in the ground, hunt, and eat plants. We do fires. We hold that power as a species monopoly. Our fire power is an index of our ecological agency—what we do that whales and wolves, oaks, and orchids cannot. Nature gave that capacity to us. That does not mean we know what to do with fire, for although we come genetically equipped to handle flame, we lack the instincts to apply it properly.

The hardwiring is fixed; the software was downloaded by culture. So we grope, we make mistakes, we abuse and misuse, we learn. But the living world depends on us to get it as right as we can. The consensus story is about us getting it wrong. We need a counter suite of stories that suggests how we might go about getting it closer to right. For that we need science. We also need poetry.

### Acknowledgments

I thank J. Williams and D. DellaSala for their bold invitation to contribute a preface to this special section, and two reviewers, J. Thomas and C. Williams, for their perceptive and tolerant criticisms of a paper that sought to introduce ideas, not review existing science. To elaborate further, as they urged, would have pushed the paper beyond its assigned limits, and to include citations (a useful recommendation) would suggest a different kind of essay. I will have to address their good criticisms in another venue.

