



The Hand on the Torch: A Survey of Woods Arson

“The hand that holds the torch will never be burned by the fire”

Tuareg saying

Introduction

It's astonishing that the Earth does not burn more. From the origins of its atmosphere it has had in lightning an ignition source. For two billion years it has had an oxygen-rich atmosphere. For over 400 million years it has had hydrocarbons thriving on land. Fire itself simply takes apart what photosynthesis puts together: it is among the most fundamental biochemical reactions on the planet. The Earth burns, in brief, because it holds life. When combustion occurs within cells, it's called respiration; when it occurs in the wide world, fire. What astonishes is not that fire exists but that it does not constantly reduce the planet to a cinder.⁽¹⁾

The fundamentals of fire's appearance follow rhythms of wetting and drying. A place must be wet enough to grow combustibles, and dry enough to ready them for burning. This can occur annually; some of the Earth's wettest places (e.g., in Asia and Indonesia) burn each year. The chancy element is the matching of such places with a suitable spark. Lightning's lottery can be seasonal, and often, random. Many places, if considered strictly from a climatic perspective, ought to burn and don't, not naturally – for example, lands with a mediterranean climate.

This geography changed dramatically when a creature appeared who had the capacity to create sparks at will. Probably *Homo erectus* could maintain fire, and did. But *Homo sapiens* could kindle it out of a general toolkit by striking, drilling, and abrading. It's a species monopoly that we will never willingly surrender. Over and again, myths about the origin of fire testify to a common scenario: humanity was weak and helpless; then fire came, usually by stealth or theft, occasionally by violence; and humanity shot to the top of the food chain. Fire meant power.

From this point on, wherever humans went, and they went everywhere, they carried fire. Ignition became more or less constant across the Earth. This does not mean every place burned: the power of fire resides in its power to propagate, and outside of hearths, this requires landscapes that are in a condition to carry it. Humanity can then magnify its firepower by modifying landscapes to accept it, primarily through slashing, drying, draining, or introducing livestock that can tromp and chew and otherwise rearrange a biota. More places can burn and they can burn in longer seasons. Still, this extension has its limitations: a biota can only produce so much surface hydrocarbons as fuel before extractions exceed its ability to recover. The solution has been to exhume fossil biomass in the form of lignite, coal, petroleum, natural gas, and so on. These require special chambers to combust in. Increasingly, humanity's firepower is being routed through machines and applied to the land indirectly through petrochemicals, tractors, chain saws, and transportation systems that have redefined what constitutes a natural resource.

Every human has the capacity to start fire. Every child, every malcontent, every sociopath, every klutz, every terrorist, every mental defective, every criminal, every Boy Scout and every Nobel Laureate can kindle fire instantly. There are no legal restrictions on access to ignition; the only constraint resides in when and where it might be applied. It is astonishing that societies succeed in controlling fire, that conflagrations have not swept cities and fields any more than they have the Earth's biosphere. Yet breakdowns do occur. When they happen, they generally go under the label of either accident or arson.

The Functions of Fire

Free-burning fire dates back to the early Devonian, some 425 million years ago. That means much of the living terrestrial world has evolved with flame, and has reached various accommodations with it. In recent decades the realization has grown how intimate this association can be. The removal of fire from ecosystems long accustomed to it has proved as ecologically disruptive as the sudden introduction of fire into ecosystems for which it is not naturally present.

Most human fire practices on the land emulate natural precedents. Fire foraging relies on the observation that certain useful flora grows best after being burned. Fire hunting mimics the fire drives evident in natural burns. Pastoral burning seeks the same flush of nutritious grasses and forbs that draw wild game to burned sites. Slash-and-burn agriculture is applied fire ecology, with an identical cycle of exuberant growth by exotics, followed by a rapid recovery of native species.

So, too, pyrotechnologies abstract from free-burning fire their critical chemistry and remake them into tools. Pliny the Elder observed with a mix of awe and dismay that “we cannot but marvel that fire is necessary for almost every operation.” Fire is the ultimate interactive technology, an almost universal technological solvent. Fire does work, fire catalyzes, fire transmutes; and it does this in hearth and field equally. Wherever people go, they carry fire, and whatever they do, fire appears somewhere in the chain of causality. We have brought fire to Antarctica. We go into space on a pillar of flame.

Whether a fire belongs or not depends on its circumstances. What one social group considers a suitable, even necessary, fire can be viewed by another group as a disruptive, even disastrous burn. Shepherd fires might stray into arable fields or orchards; fallow burning might bolt into protected pasture; a campfire might flare into forest conflagration. Fire has served as a weapon of war both directly in combat and indirectly through scorched earth policies. From early times those who loosed destructive fires deliberately or through carelessness have been held liable for damages. In cities, which were often reconstituted fields and forests, with wooden structures and thatched roofs, arson was typically deemed a capital crime.

The bottom line: fire is almost everywhere in nature and suffuses almost every act of material culture. Fire will be found wherever people are. But whether such fires are productive or abusive depends on their setting, and whether they are legitimate – whether they come with a social imprimatur – or are unwanted, demonized, or criminalized depends on how society chooses to judge them.

Globalizing Fire

This ancient chronicle has changed dramatically over the past 150 years. Industrialization is fundamentally rewriting humanity’s fire practices, replacing open fire with confined combustion, while European imperialism established state-sponsored conservation, often overseeing vast reserves for which fire protection was declared a foundational principle. Together these two trends largely inscribe the matrix within which fire now exists on the planet, and together they define what constitutes arson.

Fire industrializes

From the perspective of fire history the vernacular identification of industrialization with the combustion of fossil fuels is altogether apt. Its essence is that the Earth’s keystone fire species began to route its firepower through machines fed by fossil biomass. The process isolated fire’s traditional output – its heat, light, and transmutative powers – from the sites of their use. Fire as an invented instrument became more divorced from fire as an ecological process. By technological substitution and active suppression industrialized societies have sought – and largely succeeded – in banishing open fire from houses, cities, fields, and, where possible, even from wildlands.

Satellite images of the Earth show clearly a division between regions dominated by industrial combustion and regions still characterized by open burning. Only in a few nations do the two appear to coexist; but that simultaneity disappears upon closer inspection as a fine-grained mosaic of segregation emerges. Moreover, such scenes appear to be transitional. Where the transition lags it does so in countries like India, Indonesia, or Mexico, where traditional village life persists, often with official sanction amid a vigorous petro industry. With time they, too, will convert.

The period of conversion – what might be termed the *'pyric transition'* – is typically a time of promiscuous and abusive burning. Like the better known demographic transition that accompanies modernization, the population, in this case of fires, explodes as old ignitions persist and new ones arise, all amid landscapes unraveled and delaminated by an influx of capital, the appearance of transportation systems, and combustion-powered machinery. Eventually, the conversion works through its cycle, and as confined combustion replaces open burning, the population of fires plummets below replacement values. Many landscapes (notably, sites reserved for nature protection) begin to suffer from fire deprivation, a kind of fire famine. Agencies set up to protect against the reckless burns of the transition find themselves retooled to promote fires in the protected estates. Such fire demographics will, in principle, over time, stabilize.⁽²⁾

The transition matters, however. The onslaught attacks forests with particular vehemence, fluffing landscapes with slash and sprinkling sparks over them. For half a century in the U.S., around the Great Lakes from 1870-1920, disastrous fires swept scalped landscapes and rampaged through wood-structured communities. The "Great Barbecue," as cultural critic V.L. Parrington later termed the era, provided a lurid backdrop that helps explain government interventions and a policy that demonized fire. The U.S. experience was repeated throughout the larger imperium of European colonization.⁽³⁾

Proposed solutions were many. Fire prevention legislation, public awareness campaigns, voluntary associations among timber companies – none had much impact. Only two seemed to work with any measurable success. One was a *laissez-faire* strategy, not surprisingly favored by colonizers and logging companies: speed up the process. The "problem," as they defined it, was a too-slow transition that left a dangerous fire scene to fester; the solution was to hurry along land conversion (and the pyric conversion). Once wild lands disappeared, so would wildland fires. Once alternatives to free-burning fire were abundant, economics would argue to use them, and flame would subside from the land. Ultimately, fire vanished only when the rural population itself left the countryside.

The other strategy called for government intervention, of which the only manageable means was to stop settlement by creating protected reserves. This was a global project that reached a climax in the early 20th century. Its immediate effect, after strenuous efforts to halt the tide of colonization at often arbitrary borders, was to shut down burning. The long-term effect has been to create permanent habitats for fire.

State-sponsored conservation

This unintended consequence explains the paradox that highly industrialized nations continue to experience outbreaks of wild fire. The eruptions tend to fall into two groups. One, well exemplified by Mediterranean Europe, thrives amid a natural fire climate in which a rural depopulation has allowed the native flora to flourish and fire control capabilities to decay. Portugal, northwest Spain, Provence, Greece – the breakdown in social order has its environmental expression in broken landscapes prone to burning. The other group involves nations with large public domains under the administration of national agencies.

The world's primary firefighting nations – the U.S., Australia, Canada, Russia – all share a history of European colonization that left, in the 19th century, vast areas either lightly populated or effectively barren of inhabitants. In such circumstances public forests and parks could putatively prevent further deterioration by logging, land clearing, overgrazing, and untrammled burning. Equally, however, the colonial powers tried to install similar reserves onto landscapes still inhabited, if only by herders or seasonal users. In such instances, they met a sullen rebellion, one often expressed by incendiarism. The story of forestry in such places as India, Algeria, Cypress, and Corsica became one long firefight.⁽⁴⁾

The justification for the reserves came from new doctrines of conservation, under which the state would place lands outside both folk settlement and commercial exploitation in the name of a common, greater good, notably, to stabilize the climate, to reduce flooding and droughts, to ensure a permanent supply of wood, and so on. Whether or not rain followed the plow, drought seemed to follow the axe – and the fires the axe fed. The belief abounded that, once removed from the burden of burning landscapes, like societies unburdened of malaria or banditry, protected lands would blossom into productive modernity. Since most such lands were forested, they were turned over to the emerging guild of foresters, a self-designated caste of professionals. Leading foresters became proconsuls of a global environmentalism. They condemned fire – any fire – from the onset, and

typically announced that until fire protection was in place, no other program of land reform or forest management could succeed.⁽⁵⁾

State-sponsored conservation thus sought to remove fire from the hands of folk practitioners and to exclude fire of any source wherever possible from protected lands. Control over fire could not be unwound from the control over people. If you controlled fire, you controlled what people could do on the land and what threats they might pose to reserved lands. Any fire practice not sanctioned by forestry was denounced as arson. In this way control over fire migrated to government agencies which came to exercise a de facto monopoly.

The two processes fed each other. The more deeply a country industrialized, the more fire vanished from daily life and vernacular landscapes. The more developed a country, the more that society tended to reserve lands for the collective good. Where industrialization and imperialism converged, as in the United States, large public estates could thrive. Over time, however, a paradox emerged: instead of being refugia from burning, those reserved lands became permanent habitats for free-burning fire. Lightning, arson, accident, and agency-sponsored burning kept fire on the ground. Even today the reserves remain flashpoints for controversies over proper fire practices – and hence over what constitutes arson.

Avatars of Arson

Arson is a legal definition, and hence ultimately a political determination about which kinds of fires a society will encourage, which it will condone, and which it will condemn. These categories – what a people consider “malicious” and “damaging” - vary among societies and evolve over time within them in what a semanticist might describe as definitional mission creep.

The varieties of anthropogenic burning are all but infinite, and categories of arson, only a little less so. But a useful taxonomy might include some six species: (1) *accidental arson*, in which carelessness might be of such magnitude as to constitute criminal negligence; (2) *incendiary arson*, in which incendiarism is a charge one group levels against another; (3) *economic arson*, in which fires are set for profit; (4) *political arson*, in which fires are a means of protest; (5) *official arson*, by which people or agencies charged with fire protection deliberately or accidentally set damaging fires; and (6) *psychological arson*, or fires set out of true pyromania or for celebrity-seeking.

These categories are porous. Incendiary burning to promote one form of land use over another can easily segue, for example, into economic arson and then inflect seamlessly into political arson.

Accidental arson

Unwanted fires follow people much as rats and weeds do. In a sense, they are an expression of what might be termed “fire littering.” When they result from traditional practices, they tend to be overlooked legally, unless they inflict serious damages. At such times they reflect a degree of carelessness that many societies consider indistinguishable from malicious arson; those accountable for kindling them will be prosecuted accordingly.

The usual variants include abandoned campfires, escaped field fires, discarded firebrands such as cigarettes, and the burning of leaves, prunings, or trash. The common element is that all are started by people and thus have an identifiable agent. Legal systems treat them variously. The laws and customs governing such acts are ancient; the Old Testament, for example, specifies restitution for fires that bolt out of control and harm another’s assets.⁽⁶⁾

Anglo-American law distinguishes between strict and negligent liability. Under *strict liability* any fire, whether set for any reason good or bad, whether handled well or poorly, is the responsibility of its setter who must answer for any and all damages. The simple act of using fire is considered inherently dangerous. This is the stand of English common law. Its intention is to discourage the use of fire. Paradoxically, it is found today in a few American states (like Oklahoma) precisely because it places no restraints on fire use, because it does not distinguish suitable circumstances from inappropriate ones, and therefore allows for easy public access to fire. Interestingly, the word *arson* appeared in English (from French and Latin roots) around 1680, a couple of decades prior to Queen Anne’s law, which remains the basis for defining strict liability.

Under a regimen of *negligent liability*, culpability depends on circumstances. It matters whether the agent acted with reasonable prudence, obtained a mandatory permit, set the fire with malicious or fraudulent intent, and so on. Some American states wishing to encourage proper burning, notably Florida, have enacted legislation that defines what constitutes negligence with the intention of eliminating nuisance suits or relieving fire setters from undue concern over factors over which they have no control. Passed in 1990 the act has not been tested in court. An escaped fire set by a state agency in January 2007, however, created an unexpected “superfog” over Interstate 4 which resulted in an 80-vehicle pileup and four deaths; litigation is anticipated, and how the courts rule will likely determine the future of prescribed burning.⁽⁷⁾

In general, accidental fires, while subject to prosecution, are not regarded technically as arson since they lack the intent to cause injury. Still, under a regimen of strict liability – and within many societies – they are indistinguishable from arson in their outcomes and yield similar consequences for their setters. If the Florida law fails its court test, it will tend to encourage the de facto trend that defines any open fire as effectively an act of arson. Such a decision would reinforce the tendency in industrial societies to remove fire from the hands of ordinary citizens, to treat flame as though it were so intrinsically dangerous that it must become a government monopoly, like atomic energy. In colonies, the seizure of the torch was a calculated political decision, a transfer of power; in contemporary times, it happens more covertly, midwifed by technological substitutions.

Incendiary arson

Incendiarism is a charge frequently leveled by one group against its rivals. It reflects competing uses of land, and thus of appropriate kinds of burning. What one group – say, herders – regards as a legitimate and necessary burn to flush up pasture, another group – perhaps, foresters or environmentalists – might condemn as incendiarism, which is to say, arson. This quarrel has lasted forever.

Examples abound from everywhere. In the ancient Mediterranean, shepherds moving their flocks up and down the mountains with winter and summer routinely burned the routes and upland pastures. Such fires could spill over during drought or winds and threaten surrounding farms and villages; and it seems that some burns might be allowed to “accidentally” spread, which effectively enlarged the grazing lands available. Such behavior encouraged the torch-wielding shepherd to morph into the cloven-hoofed satyr (or Satan). In medieval times foresters charged with protecting game preserves tried to counter such behavior by denying even traditional grazing rights to places that had been burned, hoping to reduce the incentives to loose fire of any origin. They wanted unburned landscapes.⁽⁸⁾

But herders had to compete against other incendiaries. When Spanish missions appeared in California, for example, they met a pattern of aboriginal firing for hunting and foraging that conflicted with their preferred forms of pastoralism (and which not incidentally encouraged a seasonal mobility that frustrated efforts to fetter the indigenes to missions); they denounced the indigenes as incendiaries and pyromaniacs. Almost the identical situation occurred in early-colonized Australia. The newcomers could not establish themselves amid a landscape burned according to a regime out of sync with their purposes. Punishment included flogging, or worse. The quarrel was finally settled by politics, backed up by a constabulary or military force, but it ultimately succeeded because of a demographic collapse among the native population.⁽⁹⁾

An interesting variant flared along the northern frontier of Scandinavia when swidening Finns (and to a lesser degree, Swedes) collided with reindeer-herding Saame. The reindeer migrated to the mountains in the summer, and back to the lowlands in the fall, where they trampled on or fed upon swidden fields. The newcomers responded by burning large swathes around their settlements, a scorched-earth *cordón sanitaire* that stripped away the slow-growing lichens the reindeer needed for winter forage.⁽¹⁰⁾

More recently, incendiarism became, for public and commercial foresters, a perceived plague in the American South. (The state forester of Florida announced early in the 20th century that 105% of the state had burned over the past year, principally because open-range pastoralists had fired land in the spring and then reburned much of the same land in the fall.) Regionally, the collapse of the traditional economy, which had relied on regular burning for herding and hunting, gave way to clear-cut landscapes, hunting plantations, public forests on lands acquired by purchase or tax delinquency, and commercial forest plantations, once the southern pines could be converted to pulp. This was

effectively an enclosure of formerly open-access lands; and the local population responded by burning, either on their own lands (with fires that overflowed onto the estates of others) or by surreptitiously firing the new enclosures, which had the dual effect of frustrating the new owners while rendering the land useful for its old purposes. Some locals darkly suggested that the new fire lookouts were really prison towers so the government could spy on residents – and at night they dragged lighted ropes soaked in kerosene behind horses to get the burning done. A sign appeared in threatening doggerel:

You've got the money,
we got the time.
You cut the hardwoods,
we burn the pine.⁽¹¹⁾

Such incendiarism infuriated foresters, who condemned it as mindless arson. But prosecution was almost impossible. Even if a suspect was apprehended, local juries typically refused to convict. So foresters turned to publicity, creating movies and hiring publicists. One of the most celebrated episodes, the Dixie Crusaders, modeled their campaign on traveling evangelists, save that these preachers proselytized for fire prohibition. When that also failed, the U.S. Forest Service enlisted the help of anthropologists through the American Association for the Advancement of Science, and at one point hired a psychologist to investigate why southerners continued to burn when it was so manifestly irrational. Of course the practice was not in the least irrational to the locals, who considered the outsiders delusional. The psychologist concluded that the indigenes set the woods on fire out of mindless tradition: they burned because their fathers had and because they derived from the flames a small measure of excitement in hapless lives otherwise ground to powder by poverty and ignorance. It was an old charge, but one that added psychological disorder to the usual criminalization of undesired fire.⁽¹²⁾

In recent times one of the most flagrant conflicts has been playing out in Madagascar. It should surprise no one that a core contest revolves around pastoralism – an easy target since herders not only burn but move around the landscape, spreading fire and evading authorities avid for social control, taxes, and conscription. The vast grasslands of interior Madagascar are routinely aflame. To these fires, however, swiddeners burn their patches in the mountains and woods. During the French colonial era foresters denounced both groups, with little to show for their effort since local populations were indifferent to the burning or surreptitiously supported it. (Eventually colonial officials had to turn a blind eye to the practice – shocked, *shocked*, as it were, to discover burning still going on in the back rooms of their *département*.) After independence, state foresters continued their campaign with even less effectiveness until more recently environmentalists have replaced them. “Red” Madagascar remains as vigorous an emblem of reckless burning as before. Now it represents not only woods arson, a crime against forestry and the state, but environmental arson, a crime against nature.⁽¹³⁾

In the usual scenario incendiarism flares during times of transition. New landowners take over, new economies redefine and claim the products of usufruct, the pyric transition slams together the matter and antimatter of pre-modern and industrial practices. The outburst abates only when the transformation ends. Here and there, however – Madagascar is a good, stubborn example, and contemporary Mongolia is likely another – the transition doesn't complete its cycle; the mixture persists, a kind of biotic nitroglycerin ready to explode at every shake; and incendiarism becomes itself a way of life amid a land and society that seem unable to restabilize.⁽¹⁴⁾

Economic arson

Arson for profit can apply to landscapes as well as to cities. If the former lacks the clarity of the latter, that may be because there is rarely an insurance structure to monetize the act. But give people an economic incentive to do something, and they will likely find a way to do it. This observation characterizes members of the fire community as much as the general public. The range of potential manifestations is legion; a few select examples will have to suffice.

Fire and salvage logging. Over and over again, officials have sought to reduce incendiarism by banning usage after a burn, for example, by prohibiting graziers from sending flocks through a burned area for a period of several years. The point is usually to encourage timber. But when that timber burns, the loss is too great to tolerate; and one recurring response is to allow access to “salvage” that burned resource before it decays beyond commercial usage. This exception, however, provides an incentive to burn the forest in order to harvest it.

A perverse outcome, but one that has repeated itself over time and space. It happened in Europe; it has happened in Chile; it has happened in the United States, on national forests, on Indian reservations, on state lands; it has happened wherever the incentives outweigh the punishments. It is, as with so many expressions of arson, often difficult to prove, and nearly impossible to prosecute. What makes it particularly insidious is that enforcement – refusing salvage - compels the state to forego otherwise legitimate revenue, and thus invites officials to collude if only indirectly or out of despair.

An interesting example comes from the western United States. As environmental legislation began shutting down logging during the 1990s, operators and forest workers sought ways to evade the restrictions; salvage logging was one means. In 1995 a provision expanding the opportunities for salvage logging to include dead or dying trees was passed as a rider to other legislation. Because cutting occurred under “emergency” conditions, salvage projects were exempted from normal environmental legislation and public review. Operators were quick to seize on the opening, which shut a year later as the fear bubbled up that it was only a question of time before a lack of burned area would incite a wave of arson, as has happened in the past. Congress, however, declined to reenact the bill, which expired before it could be truly tested under fire.⁽¹⁵⁾

Fire and land conversion. At least with salvage logging, the intent is not to replace the forest with some other land use. Just such conversion is the case, however, where illegal fires are employed to convert woods to agriculture or to exurbs. What makes fire especially attractive is that it diverts attention from the underlying fundamentals – land conversion – into squabbles over fire protection and, in southeast Asia, into smoke abatement. Similar scenarios play out in the developed world as well. Southern California and Australia routinely blame a repeating cycle of conflagrations on “arsonists,” who are almost always outsiders to the community, rather than on powerlines, real estate developers, shake-shingle roofing, and the other features of settlement that allow fires to spread and wreck havoc. In such instances the charge of arson is a means of misdirection.

A prominent example today has appeared in Indonesia and Malaysia, where land conversion from native forest to palm plantation involves draining and burning peaty soils. Without burning the sites are useless; and once again, burning is an apparently anonymous way to effect a change in use without fingering a culpable agent. Whether the state is openly complicit or not, it is unwilling, once the land is burned, to deny new economic use. In the meanwhile it may engage in political theater by pretending that the problem is really a fire problem and flying some water bombers over the scene.⁽¹⁶⁾

In much of Mediterranean Europe no real cadastral system of land ownership exists, and forest laws apply only to actually wooded areas. If those trees are removed, the law ceases to apply. There is a social asymmetry at work: it’s difficult to illegally cut, but it’s simple to illegally burn. Accordingly, serious fires break out, which burn away the protective shield of the forest law, and shortly afterwards, construction commences on new houses.⁽¹⁷⁾

Pay to Play: Firefighter arson. Incentives, too, exist for firefighters to kindle illegal ignitions. As soon as people were paid to fight fires, they had a reason to set them. “Job-hunting” was listed as early as 1908 as a significant cause of fires in the U.S. During the early 1930s, the Depression inspired a tidal wave of fires set by destitute men, particularly in the West. Without regular crews, wardens and rangers relied on local labor; stories abound of wardens showing up to attack a fire and finding a queue of locals lounging on their shovels waiting to be hired. What worsened the scene was the incentive by others in depressed rural communities to kindle fires in the expectation that could then sell firefighting equipment, provide meals, or furnish transportation and lodging to crews. The situation spun so badly out of control that four counties in Idaho were actually placed under martial law for one season.⁽¹⁸⁾

What ended the outbreak were the public relief programs of the Roosevelt Administration and its creation of the Civilian Conservation Corps (CCC), staffed with unemployed youths. The CCC crews severed the reliance on local labor, thus removing the incentive to burn for employment. Of course such fires did not cease entirely. The Rattlesnake fire of 1953, which killed 15 crewmen, was started by a man who hoped to be hired as a firecamp cook. The Rodeo-Chediski fire (2002), the largest recorded in Arizona, was started by an Apache Indian who likewise expected to be hired to fight it.

Southern Italy, however, has taken the practice to the level of organized crime. Observers speak openly of a “fire industry,” which is really an extortion racket. Unless the state hires locals seasonally to staff fire crews and lookouts, fires break out. Everyone understands the dynamic at work. It is a

form of state subsidy granted under the cover of fire protection and under the very real threat of wildfire. It is, in truth, a fire Mafia.⁽¹⁹⁾

The problem is in principle insoluble. If fire protection matters, then society will pay someone to do it, and if society pays, people will find ways to game the system and extract money from it, even at the expense of the land being protected. Money transfers replace resource management. Still, well-paid fire crews remove the incentive for job-hunting ignitions, and ferrying crews and equipment around regions or nations, which seems absurdly expensive, reduces the incentives for local communities to set fires for which local merchants will receive windfall profits. Such transfers among regions may seem illogically costly, but only because the hidden expenses associated with misplaced incentives aren't factored into the ledger.

Political arson

Barn burning, rick burning, woods burning – all are acts of economic vandalism that can segue seamlessly into political sabotage. They are, in the words of James Scott, among the “weapons of the weak.” They are a means of protest, a means of attack, and a means of damaging what an oppressor values. And in ways perhaps unique to fire, they are also a means to transmute a resource a victimizer wants into one the victim can use.⁽²⁰⁾

The record of fire exploited for broadly political purposes is ancient and extensive. As the Prometheus myth (and almost all its variants) testifies, fire is power: who holds the torch can command whole landscapes by deciding where it will be applied and where withheld. Almost never is fire freely given; only in modern times, when matches and Bic lighters are everywhere and can be carried in pockets and purses, has fire become so banal that strangers might ask freely for “a light”.⁽²¹⁾

Moreover, fire has two properties that make it particularly attractive for political arson. It propagates, and it can be anonymous. The first renders fire different than a shooting or theft. A kindled fire more resembles a contagion; it can spread; a single kindling can, in the right circumstances, consume an entire city or forest. The second property derives from the ease with which fire can be set and the simplicity by which it can be made to ignite after the arsonist has passed from the scene. (In the American South, for example, a fascies of matches might be tied around the bottom of a cigarette. As the cigarette smolders away, it eventually reaches the match heads, which flare and ignite the surrounding vegetation.) All in all, it is usually difficult to catch an arsonist in the act. This is especially true when the arsonist acts with the tacit support of the local population. Fire takes the place of a roadside bomb or assassination.

Illustrations abound. Unsurprisingly, European imperialism produced an endless stream of examples. French expansion across the Mediterranean sparked a firefight in Corsica that still continues, and then yielded a ceaseless fire war in Algeria. Ethnic and economic interests colluded: by displacing graziers for farms and protected forests, French colonizers kindled a chronicle of reactive fires. When climatic conditions were favorable, the fires became a plague that could cripple the colony. Officials responded with edicts, threatened punishments, stronger enforcement, and rules that demanded local communities attack the fires around them, all of which only stirred up further resentments until even the landscape simmered with an ecological insurgency to match the political one. The French attempt to suppress fire never succeeded in any meaningful way.⁽²²⁾

Similar scenarios played out for the British. The collision between a sodden Britain and fire-flushed tropical and subtropical colonies forced British imperialists to confront an expansive burning unlike anything in their historical consciousness. Everywhere – Australia, Cape Colony, Sierra Leone, Zambia, and especially India – they sought to control fire, and understood that controlling fire was a means to control the indigenous population. The indigenous population understood that same logic, and sought to reinstate fire. Over and over again, critics denounced Britain's forward fire policy as among its worst oppressions, one that struck to the core of everyday life.⁽²³⁾

British officials never achieved their ideal, a landscape free of fire. Repeatedly, they had to compromise, and they understood that if they did not they would be burned out. When the rhythms of the monsoon produced the right mix of wet years followed by a drought, fires could be explosive. In 1921 Kumaon was simply aflame; the British raj had to watch helplessly. A few years later M.D. Chaturvedi observed that “Prosecutions for forest offences, meant as deterrents, only led to incendiarism, which was followed by more persecutions and the vicious circle was complete.” But the removal of indigenous burning could be equally disruptive. After attempting fire exclusion in Burma's

teak forests, the British realized that they had destroyed the capacity of teak to reproduce and had encouraged conflagrations.⁽²⁴⁾

The only pragmatic response was to surrender the goal, to co-opt the locals, or to seize the torch and do the burning themselves. In Burma they yielded, and surrendered landscape burning to the Burmese. In India they tried to co-opt the practice, and did, reluctantly, and as quietly as possible. They adapted swidden into *taungya*, a species of agro-forestry. They burned protective fuelbreaks around forest reserves to shield them from the infestation of burning going on around them. As Inspector-General Berthold Ribbentrop fumed, it was a task that consumed a sizeable fraction of their annual workload.⁽²⁵⁾

Often, they found it necessary to project such burning into the reserves, carving them into manageable blocks. Local forest guards nominally hired to fight “jungle” fires often practiced “protective” burning on such a scale that it became indistinguishable from native use. By 1924 “early burning” (so called because it was conducted early in the dry season) was incorporated into the India *Forest Manual* as a bad practice but preferable to the alternative. Better to have controlled burns under official sanction, they reasoned, than conflagrations set by hostile natives.

The popular logic behind jungle arson was that it made the lands biologically accessible for traditional uses. The locals had little interest in mature timber. They wanted fallowed woods that they could readily hack into swidden plots, grassy pasture that their herds and flocks could feast on, edible forbs and medicinal plants and honeyed hives they could gather. Even where it worked (selectively) fire exclusion shifted the biota towards dense woods or more mature trees; but once burned, the biota reverted to those characteristics valued by the indigenes. They had every reason to burn. The only way to abolish what the authorities called arson was to ban the locals from the woods altogether or to have their sustaining economy evolve into something else.

Russia relates, as so often, a weirdly inverted narrative. When Tsarist Russia began liberalizing its economy after the emancipation of the serfs, arson flourished – and fire protection became a symbol of modernization’s success, or at least its necessity. The alternative was peasant superstition and fatalism, like holding up icons of the prophet Elijah to ward off wildfires. Fire control became a public emblem of modernity – an expression of an attitude as much as a practical reality. So far, so similar.⁽²⁶⁾

The Bolshevik revolution reinforced the conviction that fire was a threat to full production and the sense that continued burning was both an archaic superstition and an implicit threat to state control. The process that, in most of the industrial world, took the torch out of the hands of folk practitioners and placed it under state sponsorship, such that the state claimed a de facto monopoly (as through fire were atomic energy), here achieved its purest expression. The 1921 fires along the Volga folded into drought and famine and civil war to create a sense of uncontrolled fire as part of a larger threat to the state, as though nature had become another partisan in the civil war.

Yet burning persisted – had to persist. Then in 1972 stubborn fires in peat plagued much of European USSR, surrounded Moscow with flame and smothered it in smoke (just as the country was negotiating the ABM Treaty with the U.S.), and resulted in a veritable *ukase* that banned all burning. Thousands of years of agricultural practice were now, officially, a crime. The burning of course had to continue, and did. It just proceeded without formal assistance. In May 1986, whipped by *burya* winds, some 12-14 million hectares burned in Trans-Baikalia. Official records deny the event, although it is well documented in satellite imagery. Since the burning began around villages, it is likely that many communities were swept up in the flames. The official response is that nothing out of the ordinary happened.⁽²⁷⁾

By contrast, the smoke that settled over Moscow in 2005 was officially attributed to careless mushroom pickers, and unofficially to suggestions of calculated mayhem. Ultranationalist parliamentarian Vladimir Zhirinovskiy charged that the fires were the result of sabotage, arson, or “something from outer space”.⁽²⁸⁾

In more recent times, the Mediterranean has furnished the most vigorous examples of political arson. Palestinians burning Israeli afforestation projects is an obvious expression. But the more instructive illustrations come from Greece and Iberia.⁽²⁹⁾

Greece has an ideal geography for fire – a Mediterranean climate, rugged terrain, a long history of fire-catalyzed agriculture. What held Greek fire in check was close cultivation and political force. Under the 1960s Rule of the Colonels, wild fire was rare. Then the dictatorship collapsed, a modernizing economy began unraveling the ancient structure of the landscape; rural folk started their migration to Thessalonika and Athens; the untended countryside began to overgrow, and to burn. The process accelerated after Greece joined the European Union in 1981, despite the EU's agricultural subsidies.⁽³⁰⁾

The background count of burned area steadily rose, powered by the rise in landscape combustibles. But the chronicle shows extreme spikes from time to time; these correspond precisely with national election years. The Right burns to portray the Left as incompetent to maintain security, a matter of public safety. The Left burns to provoke an overreaction from the Right. In the past, protest fires were buffered by the character of the surrounding landscape: they could only progress so far. Now, with more of the countryside effectively fallow, they can propagate. The decision to remove rural fire protection from the Forest Service and assign it to a national emergency service organization has further weakened the capacity to respond. The scene is deteriorating so rapidly that the borders between arson and accident are becoming meaningless.⁽³¹⁾

Iberia has displayed a different sequencing of protest burning. These began seriously under the dictatorships of Franco and Salazar when they confiscated former communal lands (*montes*) for afforestation, primarily with eucalypts. Local objections were two. First, they protested the loss of lands, and the forced shift from an economy of herding to a putative one as woods workers. Second, the eucalypts were an alien species, and a toxic one, that precluded local fauna. The planted woods became ecological deserts – a biotic version of classic enclosures. They were useless to the local inhabitants, a woody weed whose single purpose had negative value for the traditional economy.

As the plantations matured, they reached stages at which they could carry fire, and that lag describes exactly the scale of burning. They became mirror images: the curve of fired area replicates that of planting. This is incendiarism sliding into a classic expression of political arson. In a classic state response,⁽³²⁾ the Franco regime built up a fire suppression organization to contain the fires and reimpose order.

Then the dictatorships ended; Spain and Portugal joined the European Union; and their economies, like that of Greece, suddenly modernized. Rural populations poured into metropoli. Where rainfall was sufficient to support lush vegetation, notably, in the northwest – Galicia and northern Portugal – the land overgrew. It was now laden with an accelerant in the form of the eucalypts, a phoenix genera, which burn avidly and create conditions for their own perpetuation. Without close cultivation, the land has become a tangle of combustibles, and a hornet's nest of wild fire. The cause of ignitions is no longer politically inspired. It is, rather, the politics of modernization that has created conditions for fire's spread.

Simply sending in more fire crews and airtankers will not contain the menace, however attractive to CNN and political oratory. The fire scene spiraled out of control because of demographic shifts, and it will only be contained by a countershift that creates an alternative to close cultivation. If the EU's Common Agricultural Policy were to subsidize landscaping apart from commodity production – if it were to substitute the production of ecological goods and services in place of wheat and olives – it would be possible to work the land into a less fire-prone state.⁽³³⁾

All this is no longer political arson as normally understood, but has morphed into a politically constructed fire plague. Fire synthesizes its surroundings: those surroundings are often, as here, the outcome of political decisions.

Official arson

“Official arson” – the phrase sounds like an oxymoron. The point of arson is that it is anti-social; it seeks to damage assets, attack ideas, and harm institutions. Officialdom is its antagonist, not its ally. To accuse fire agencies of arson would seem a stretch.

It is. Yet fire can be a weapon of the strong as well as of the weak. Fire policies are a means of social control. While historically this has most often meant stopping the fires of locals, it can also mean replacing them with another suite of fires. It may mean ignoring *sub rosa* burning that accompanies or quickens illegal logging, road building, or housing developments, or actively (if surreptitiously)

supporting such activities. Instead of protecting against fires, official institutions become vectors for starting them. In an eerie echo of *Fahrenheit 451*, the fire agency becomes an arsonist.

The distance between purpose and practice can even spawn a kind of vigilantism, as in the case of Van Bateman, a fire officer of the Coconino National Forest (USA), who was arrested on charges of woods arson and pleaded in his defense that he was only doing what had to be done – getting fire back on the land. In his judgments the constraints on officially conducted prescribed fire had grown too onerous. The requisite burning had fallen behind. Setting fires on his own was a means to boost those numbers. His motive was not economic, nor was it political; in a sense here was a case of officialdom at odds with itself. Like locals unable to set the fires they considered necessary, civil servants, operating outside the bounds of the law, were doing the burning they believed essential. The old quarrel between folk and official has here been internalized into the institution.⁽³⁴⁾

It is worth noting, too, that official burning, if done poorly, can break out of its prescriptions and roar over the countryside. In 2000 the U.S. National Park Service set two fires that did just that. One at the North Rim of Grand Canyon National Park bolted away, forced an evacuation, and stopped only when it hit the Canyon's rim. The next day a prescribed fire at Bandelier National Monument, New Mexico, broke free and raced through Los Alamos, scouring out a good fraction of the town and even burning into the national laboratory. Was this incompetence, or de facto arson? It depends who you ask. The outcome is identical. (It might be worth observing that the largest recorded fires for the American states of Arizona, New Mexico, and Colorado were all set by members of the fire community – one by a man hoping to be hired to fight it, one set by a fire crew that escaped control, and one set more or less accidentally by a technician hired to prevent fires.)⁽³⁵⁾

A variant quarrel can occur between agencies and professions, each of which considers the other inept or deluded or both. Perhaps the most interesting version is occurring now in Australia where foresters and environmentalists are slugging it out over what burning is acceptable and who should decide. Over the past 25 years state foresters have lost their political power. State forests have been redesignated as national parks or nature preserves, and turned over to wildlife biologists and other guilds for management. In the process virtually everything foresters had previously done was condemned; this included their fire practices.

What makes the quarrel particularly interesting is that Australia's foresters, almost alone in the world, had made routine controlled burning the basis for bushfire protection and forest management. They burned large areas on a frequent rotation in the expectation that these benign burns could hold down fuels sufficiently to reduce eruptive fires to something bushfire brigades could contain or that might at least dampen their damages. They appealed to the manifold adaptations to fire by much of Australia's biota and to the long tenure, with firestick in hand, by its Aborigines. The firestick has passed from lightning to Aborigine to rural Australian to forester, who added the measured discipline of scientific research and bureaucratic control.⁽³⁶⁾

But in the quarrel over crown lands, "hazard reduction burning" became equated with woodchipping, clear-felling, and vermin control. "Greenies" might accept fire in principle, but felt Australia had too much of it, and wanted nothing to do with its raw rural past or with forestry's presumptions and prescriptions. In order to be justified, they insisted, burning had to have ecological intent, not simply done to abate fuel loads. In practice this meant that the expansive programs of broad-area burning shriveled. Just before the Black Saturday catastrophe of February, 2009, the minister of the environment was reported to have received, and was preparing a response to, proposals to ban fuel-reduction burning altogether under Australia's Environmental Protection and Biodiversity Conservation Act. If accepted, prescribed fire would be equated with feral foxes and predator poisoning. In this way, what had been official fire by the previous public land agency would be redefined as arson, and the ancient quarrel between foresters and herders would be modernized as one between foresters and environmentalists.⁽³⁷⁾

Like fire, which adjusts its character to its setting, so it would it seem arson does likewise. The conflict that goes under the name "arson" is thus not simply between landowners and the dispossessed, or between officials and citizens, but between those who have the power to determine which fire is good and which bad. It is a contest between those who hold the torch and those who don't and wish they did.

Pyromania and celebrity-seeking

True pyromania – the psychological compulsion to set fires, an ungovernable impulse – is rare. While the charge is often flung, it rarely sticks to the wall. The reality is that if humanity were genetically hardwired such that significant numbers could not control themselves around flames, it would have burned itself to extinction long ago. The reality is that social control is so profound that only preadolescent boys regularly misuse fire; they set fires for the same reasons they would smoke cigarettes behind the barn or play with power tools. Even pyromania derives not from the properties of fire so much as from fire's association with other psychological traumas and obsessions. That fire is (or was) so common increases the likelihood of that unhappy bonding.

What is more prominent is fire as a means of celebrity-seeking. There is a long tradition of firefighters – the issue is especially prominent with volunteers – who set fires in order to be seen fighting them. It is a chance to be “a hero,” to be in the public eye in an admiring way, or at least act out in public. If caught, such perpetrators are rightly charged with arson. But modern communications has expanded the range of opportunities.

Most residents of the industrial world know fire indirectly through television. They see only its most dramatic and damaging expressions – fire is among the most telegenic of scenes. Setting a fire that can dominate newscasts for a day or week is a way to infamy as surely as the murder of a rock star or the assassination of a politician. The sensationalism of TV news in particular is probably an incitement among some to set fires; and the effect may be more pronounced around media centers like Los Angeles. Statistics are sparse, but it is likely that celebrity-seeking rather than pyromania accounts for some of the fires set that otherwise go into the elastic roster of “unknown” causes.

How many? The United States in 2006 had over 96,000 wildland fires, of which no more than a handful were likely set for such reasons. Yet these are by their nature prone to be those that blow up and capture media attention. The recent outbreak in Australia (Black Saturday, 2009) involved some 400 fires, of which two are believed to be arson, and for one of which an arrest has been made. Judging from media attention, one would think that arson caused the holocaust; similar announcements accompanied the 2001 and 2003 bushfire rampages; and some of the charges are likely true. If so, that still leaves 398 or 399 fires to account for.

Yet it is also true that arson of this sort is a useful exercise in misdirection. The vast majority of the fires resulted from accident, or carelessness, or from powerlines arcing in the high winds. The fires wrecked landscapes and overran communities because conditions favored them: the power of fire, it is worth recalling, derives from its power to propagate. Focusing only on ignition avoids the fundamental question, which is, how do people live on the land, and why do such fires, regardless of cause, acquire such savagery? Instead of discussing irresolvable issues like land use, it is easier to blame arson and the occasional sociopath.

The problem of solitary arson is real. The political uses to which it is typically put, however, can distort the discussion away from the basics of fire protection and into realms that resonate with free-floating cultural anxieties – the suspected arsonist is almost always an “outsider” - but have little possibility of addressing the matters that allow such fires to do the damage they do.

Extinguishing Arson

What might we conclude? What solutions or lessons-learned might derive from a historical survey of woods arson?

The first is that the category is too elastic and generic to prescribe useful treatments by labeling alone. Calling something “woods arson” does not identify either cause or consequence, nor what actions might correct the perceived imbalance. Recall that fire is not a substance but a reaction, and hence takes its character from its context. Understand its context, and you understand a fire. Control that context, and you control that fire.

Instead, treatments require specific solutions based on local geography, firesheds, and ignition sources. Some answers will demand structural responses, some will reside in cultural circumstances, and some may be unique and personal. Overall, if arson is seen to be a problem, a response will focus on ignition or setting or both.

Three E's

Except in nature preserves that exclude people and their habitual fire practices, humans directly or indirectly account for 90-98% of ignitions. The time-honored strategy to contain them emphasizes education, enforcement, and engineering. These considerations apply to all ignitions, arson among them.

Education has a mixed record. There is little evidence that it alters behavior among those committing arson or its incendiary avatars. A long litany of denunciations, proselytizing, and the occasional show trial has yielded little of substance. Advertising does seem to be effective among children, but mostly among children removed from the landscapes in question; that is, it shapes urbanites' understanding of fire in distant sites, not the attitude of those living in the rural, arson-infested countryside. Similarly, it can work across generations if a family moves to a city. Where it seems most effective is in promoting the fire agencies themselves. The U.S. Forest Service, for example, is indelibly associated with its symbol of fire prevention, Smokey Bear, even as Smokey no longer truly reflects the agency's policies. Countries from Chile to Russia to Indonesia – with animal emblems from rabbits to moose to orangutans – have created fire prevention programs.

Enforcement, too, has spotty results. Occasionally it can track down and halt a serial arsonist that the community does not want (the person responsible for the lethal 2006 Esmeralda fire in California is an example). But arson is a tough crime on which to convict, and local juries rarely support the authorities when "arson" has the tacit approval of a community that does not consider such fires as damaging to its interests, and in fact, may worry that the suppression of arson is a conspiratorial wedge intended shut down their access to fire altogether. The threat of punishment may be a deterrent – or not. Attempts to impose an alien edict by police powers, however, cannot boast much success. They only drive a fire insurgency further underground and toward more innovative means of burning.

Nor has engineering, narrowly conceived, proved a bulwark against unwanted flames. It claims its greatest successes with machines, such as fashioning spark arrestors for chain saws and locomotives. Other structural devices, such as fuelbreaks, collapse under extreme circumstances like high winds, which can loft firebrands a mile away. Like many fire strategies, they fail at exactly the time when they are most needed. (Why fire agencies continue to believe in the face of more than a century's worth of evidence that they can make the big fire go away with one more surge of manpower and machinery is another example of a faith-based technocracy – and a theme for another occasion.)

Not engineering as normally conceived but all-purpose land management is the surest solution. In a properly conditioned landscape it is not necessary to abolish fire, which may be neither possible nor desirable. Such a scene can reduce the incentives to start fires and diminish the damages they can cause. It substitutes a policy of fire resistance for one of resilience. If the land is intrinsically fire-prone or is a cultural landscape shaped by fire, the likely outcome will mean substituting tame fire for feral fire. Suitably buffered such places take away the power of arson. The fire is either accepted or easily extinguished.

Suppression

In any event, not all fires can be prevented, absorbed, or made to self-extinguish. Some legitimate burns will escape their prescriptions, some will start from accidents, and some nature will kindle. The solution is rapid detection and attack. Every fire starts as a point source; every fire can be controlled by a single firefighter and simple equipment if attacked before it grows large. This is the logic behind most wildland fire protection programs. And it is the reason for what must appear to outsiders as an obsessive determination to leave no fire behind – to attack completely every ignition, no matter how apparently innocuous or remote. The informing logic is that every large fire begins as a small one; if every small fire is throttled in its cradle, none will grow large. That strategem encompasses arson as fully as a lightning kindled snag, a fallowed field aflame, or a fire started by a catalytic converter that then races over cheat grass.

A century of experience with aggressive suppression among several countries has now accrued a body of evidence. The short summary is, fire exclusion by removing people, preventing ignitions, and suppressing fires that do occur is very effective – for a time. Whether it can sustain itself varies; the

primary parameters are whether the land is naturally fire-prone or not, and whether it holds people or not. If empty of people and not intrinsically fire-prone, then a program of calculated fire exclusion may succeed since the land, once fire is removed, will not support burning without other acts such as logging, slashing, or draining.

In fire-prone lands, and particularly where people routinely access them, the exercise fails. Over a period of time, which may range, depending on local circumstances, from years to decades, the area burned decreases, and even arson is shackled. But then fuels build up, the biota rearranges itself in ways that promote more ferocious fires, and the fires that do occur burn so hugely and savagely that they wipe out the gains of the early years. Today in the United States some 98% of all fires are kept small (under 3 hectares); but there are inevitably times when the number of ignitions overwhelms the system and the ones that escape and blow up tend to become '*megafires*'. The overall area burned in the country is increasing sharply.

In brief, the firefight is a necessary undertaking that can put down a temporary ecological insurrection. It is not a means to govern landscapes. It can quell the worst outbreaks of wildfire during a time of social transition, but it cannot substitute for the management of a countryside's fundamentals. This reasoning applies equally to arson. Not all arson fires can be prevented or caught early – the shrewd arsonist will ensure they aren't. Their capacity to damage must be dampened by shaping the character of the landscape, which will determine ignition's capacity to spread.

Where reach exceeds grasp

Ultimately, control of arson tends to fall back on platitudes: convince the resident population that such fires harm them, remove serial arsonists, quench fires early, and quell their capacity to damage assets. Determining the basics means identifying what kind of arson is at issue. If political, then it means fixing the political landscape; if economic, then the economic landscape; if institutional, then the institutional setting.

It also means deciding where fire has a legitimate role. For places where fire's removal does harm, a solution to arson will mean reinstating fire either through official channels or by co-opting opportunistic fires. Some national forests in the U.S., for example, accept fires of any origin – that is, they allow them to burn – if they occur within specified "prescriptions" or are deemed to advance agency objectives. Such a strategy removes the threat behind an arsonist's challenge; the miscreant is simply doing what the authorities would do. Likewise, fire agencies have in the past dramatically lessened illegal burning by decriminalizing it – by putting it under a permit system that disallows burning under adverse conditions but allows it to proceed when circumstances are favorable.

In effect, what might otherwise be threats are absorbed into the administrative apparatus. Canada, for example, had success doing this for slash burning by agricultural settlers. The most spectacular example, however, is Florida's experiment with wholesale permitting that has converted rural burners into legal agents. By means of certification programs and permits, landowners who would otherwise be guilty of arson are able to do what they must do – burn – but with advice and assistance from the state. Today, Florida burns some 3.2 million acres annually and would like to burn twice that much for purposes of public safety and ecological betterment. The only way to achieve such goals is by enlisting the private sector. Still, Florida has repeatedly proved an outlier; whether its success is taming illicit burning is an exemplar or another expression of exceptionalism remains to be determined.

The sad fact remains, however, that the deeper drivers behind illicit burning and outright arson are beyond the purview of fire agencies or landowners, be they private or public. Fire comes and goes on the land – all fires, legal and illegal both – as populations change and as land experiences new uses and as climatic conditions wane and wax. Rural burning, and the arson associated with it, disappears only when rural populations leave, or the land is reclaimed by a new economic order. It is during this transitional period that fires become most problematic: then they are under the putative control of neither regime.

Historically, the pyric transition seems to last 50-60 years – this is a guess since the topic has not been formally studied and hence anomalies abound. Mexico, for example, has industrialized patchily, a full-bore transformation hobbled by its revolution's commitment, until recently, to a system of communal landholding by local *ejidos*; South Africa, too, has a residual apartheid of fire regimes; and Nigeria seems to have exported its fossil fuels rather than applying them to its own flame-drenched

countryside. The differences can follow political borders with remarkable fidelity. South Korea has made the transition; North Korea has not. Thailand has flames mostly in its remote mountains; Myanmar has flames everywhere. It will be interesting to see what figures result for rapidly modernizing countries like India and China, and which fire-history trajectory countries like Indonesia follow. And it will be fascinating to watch scenario play out in places like Mongolia.

The past as precedent

Historically, solutions have centered on three strategies. One is to fence off the troubled lands into protected reserves. In fact, the spectacle of promiscuous, abusive burning was a powerful incentive to establish reserves even in the face of hostile economic and political pressures. The second solution is to hurry through (and ameliorate) the period of conversion. The sooner people are replaced and the land rededicated to other, more modern purposes, the sooner the frontier phase with its violence and wastage will pass. When wildlands, peatlands, or fallowed forests are no longer wild, peaty, or swiddened, they no longer burn. Such wholesale transmigration schemes lie well beyond the capabilities of fire agencies to control, and often pull their own train of unintended consequences. The third solution is to co-opt what would otherwise be unwanted and illicit burning and put it to sanctioned purposes.

Yet fire institutions can assist with all these strategies. Where fire is a legitimate presence – something needed for ecological integrity, or an instrument with genuine economic utility – agencies can see to it that the burning happens in helpful ways. Where fire remains a tool for land use, one that that pyric transition will eventually replace, they can ensure that the burning which will happen is executed properly, or even under supervision. Paradoxically, the more they actively assist, the less the wastage and the quicker the conversion. And fire institutions can absorb or collaborate with and shape citizen burning where it will or must occur.

What has not worked is simple denunciation and criminalization, or the use of fire prevention as a further instrument of state oppression. Denunciation is ignored. Criminalization creates a black economy of burning, and surrenders even nominal control over proceedings for none at all. Fire prevention as a vehicle for unwanted state intervention provokes fire insurgencies. Or to state the matter differently, what does not work is calling something that is the result of land use, industrialization, or corruption a “fire problem,” and trying to fix the underlying fundamentals by quenching flames. Southeast Asia, for example, does not have a “fire problem” or a “haze” problem. It has a problem with ill-considered transmigration schemes and transformations of forests and peatlands to palm oil plantations. Inventing animal symbols for fire prevention and dispatching air tankers to douse smoldering organic soils only taints fire management with other bad behaviors by elites and the state.

Hand and torch

Fire takes its character from its context. It can animate, often vividly and undeniably, those factors that sustain its flames. It is possible to break the reaction and extinguish a particular event. But the flames will remain and return as often as their circumstances permit. Fire is not a creature that can be shot out or removed, or a substance that can be buried or exported or dumped into the ocean. It is a reaction: it is what its constituent parts and their arrangement make it.

Controlling fire means controlling both ignition and kindling, for fire requires both. Who will burn and who will get burned depends not just on who scatters the sparks but on who controls the kindling. If one hand holds the torch, the other must shape what the torch can burn.

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- (26) Best general survey is Cathy A. Frierson, *All Russia is Burning! A Cultural History of Fire and Arson in Late Imperial Russia* (University of Washington Press, 2002). For the more forestry-grounded version, see Pyne, *Vestal Fire*, pp. 274-342.
- (27) A synopsis of the 1987 fires is available in Pyne, *Vestal Fire*, pp. 524-531. Expressions of official denial come from the author's experiences in visiting the region in 1993.
- (28) "No Relief from Smog in Sight," *Moscow Times* (14 October 2005), reported in Global Fire Monitoring Centre: http://www.fire.uni-freiburg.de/media/2005/news_20051114_ru.htm.
- (29) The catastrophic plague of burning has been extensively studied in Iberia and its analysis published widely (if patchily) in conferences. See R. Velez, "Forest Fire Prevention: Policies and Legislation," in ECE/FAO/ILO, *Seminar on Forest Fire Prevention, Land Use and People* (Athens: Ministry of Agriculture, Secretariat General for Forests and Natural Environment, 1992), pp. 251-263 (also, for Greece, D. Kailidis, "Forest Fires in Greece," pp. 27-40); and, more recently, João Santos Pereira et al, eds., *Incêndios Florestais em Portugal. Caracterização, Impactes e Prevenção* (ISA Press, 2006).
- (30) See Kalidis, "Forest Fires in Greece," *op. cit.*
- (31) Gavriil Xanthopoulos, "Olympic flames," *Wildfire* (Sept, 2007).
- (32) For a popular overview, with a list of backup citations, see Pyne, "La Nueva Reconquista," in *World Fire*, pp. 110-128.
- (33) See, for example, Paul H. Zedler and Francisco Castro Rego, "Regimes do fogo e biodiversidade: repostas dos ecossistemas e alternativas de gestão," 199-230, in Pereira et al, eds., *Incêndios Florestais em Portugal*.
- (34) Dennis Wagner, "Veteran firefighters say they set unauthorized blazes," *USA Today* (28 May 2007).
- (35) For an account of how the New Mexico fire happened, see Pyne, "An Incident at Praxis," *Smokechasing* (University of Arizona Press, 2005), pp. 160-164.
- (36) For a short historical survey up through the 2003 fires, see Pyne, *The Still-Burning Bush* (Scribe Books, 2006). At the time of this essay, the Teague Royal Commission is still collecting information, so the direction it will eventually take is unknown.
- (37) The submitted proposals to ban fuel-reduction burning were reported in the Australian media; see, for example, Siobhain Ryan, "Burnoffs following Victoria bushfires a 'threat to biodiversity,'" *The Australian* (12 February 2009).