

RHYMES WITH CHIRICAHUA

by Stephen J. Pyne

While the Chiricahua Mountains are famous for many reasons to many groups, they are rarely known for their fires. They should be. Some start from lightning, some from ranchers. Some are set by rangers, or are allowed some room to roam by them. Some are left by transients in the person of hunters, campers, and hikers. In recent years more are associated with traffic across the border with Mexico. The Chiricahuas have, at the moment, less of this than other border-hugging districts within the Coronado National Forest, but fires to distract, fires to hide, and fires abandoned by illegal border-crossers are becoming more prominent. All in all, it's an interesting medley.

Mark Twain once observed that history doesn't repeat itself but it sometimes rhymes. These days it seems there is a lot of rhyming in the Chiricahuas as fires echo a fabled but assumed-vanished past. This revival moves the Chiricahuas, among the most isolated of mountain ranges, a borderland setting for fire as for other matters, close to the core of contemporary thinking about managing fire in public wildlands.

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The Chiricahuas – actually a giant, deeply eroded and flank-gouged massif – are among the southernmost of America's Sky Islands, compact mountain ranges that both cluster and stand apart from one another, like an archipelago of volcanic isles. They are famous for their powers of geographic concentration. Their rapid ascent creates in a few thousand vertical feet what, spread horizontally, would require a few thousand miles to replicate. Here, density replaces expansiveness. One can see across a hundred miles of sky, and into half a continent of ecosystems. It is possible to traverse from desert grassland to alpine krumholtz almost instantly.

They are equally renown for their isolation, not only from the land surrounding them but from one another. The peaks array like stepping stones between the Sierra Madre Occidental and the Colorado Plateau; here, North America has pulled apart and the land has fallen between flanking subcontinental plateaus like a collapsed arch, leaving a jumble of basins and ranges as jagged mountains to poke through the rubble. The degree of geographic insularity is striking: they are mountain islands amid seas of desert and semi-arid grasslands. On some peaks relict species survive from the Pleistocene; on others, new subspecies appear. No peak has everything the others do. A Neartic biota mixes with a Neotropical one, black bear with jaguar, Steller's jay with thick-beaked parrot. The Pinalenos have Engelman spruce. Mount Graham boasts a red squirrel. The Pedragosas grow Apache pine. The Peloncillos are messy with overgrowth and dense litter; the Huachucas, breezy with oak savannas. The Madrean Archipelago displays the general with the distinct: unique variations amid a common climate. They can serve as a textbook example of island biogeography. That observation extends to their fires as well.

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From the distance, rising boldly, the Chiricahuas stand like a sentinel; up close, they act more as a portal. A portal for the onset of the southwest's fire season. A portal for human traffic across the international border. A portal into a long-suffering discourse about the relative significance of lightning and people as sources of ignition, and hence as shapers of fire regimes.

It is a difficult geography to subsume either as an idea or an administrative entity. The last holdouts of the Apaches, for example, thrived by navigating its complicated terrain, including the politics of the international border with Mexico. (Geronimo finally surrendered at Skeleton Canyon in the neighboring Peloncillos.) Still, its isolation and its capacity to condense here achieve something that is difficult to do elsewhere. Sky islands can act as semi-controlled experiments, sieving out noise and distilling essences. So while the Chiricahuas might seem as remote from the national geography of fire as Easter Island, they highlight a theme of considerable significance in their curious display of fire's causation.

Throughout the Sky Islands fires roughly balance between human and natural causes; and this, historically, has been the case with the Chiricahuas. Lightning is abundant, and despite the rugged terrain - volcanic tuff eroded into deep gorges and pinnacles, a landscape topographically minced into an infinitude of fire behavior pixels – nature’s ignition is more than ample to keep fire on the land. But ever since the climate stabilized after the Pleistocene, people have been on the scene, and they have burned. Both ignition sources, moreover, come embedded in larger geographic processes. Climate is a powerful presence that does more than kindle snags: it sculpts much of the overall physical geography. Likewise, people do more than throw sparks: they shape much of the landscape, particularly in ways that affect how a spark, once thrown, spreads or not. The proportions of fires set by each source – and the proportional contribution of each to fire regimes - rise and fall with the changing rhythms of climate and human migration.

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There is little question that lightning is adequate to kindle copious fires and that the extent of burning aligns smartly with the ebb and flow of atmospheric moisture. Connect the sky island dots with the volcanic edge of the Colorado Plateau, and the resulting circle will trace the epicenter for lightning-caused fire in the United States. Like a rocky outlier that catches the first swells of an approaching storm, the bulky, border-hugging Chiricahuas make first contact with the Mexican monsoon, the signature onset of the southwestern fire season.

This occurs annually. Regionally, there is a period of winter rains, followed by a long spring dry season, succeeded by summer thunderstorms as an inflow of moisture-laden air advances in a vast gyre from the Gulf of Mexico northward across the Mexican *altiplano*. The early storms, crackling with dry lightning, start the largest burns. As the rains continue, the land greens up, and although fires kindle in ever-greater numbers, they spread more weakly.

Atop this cycle of wetting and drying lie others, most prominently the El Nino-Southern Oscillation that accounts for a peculiar cadence of multi-year wetting and drying. The ideal formula calls for several years of above-average moisture followed by drought. This pattern leaves more grass and shrubbery than organisms can crop off or decompose (in a semi-arid climate like this the capacity for biological decay is scant). Fire takes the surplus.

But such observations are trivial. Of course fire obeys a logic by which wetting grows fuels and drying allows them to burn; that happens everywhere. Of course hot, dry, and windy conditions favor more fire than cold, wet, and calm ones; probably *Homo habilis* understood these dynamics. Documenting the relationship between fire’s environment and its expansive presence would be embarrassing by itself, like noting that clear summer days are warmer than overcast ones. If this is the extent of documentation, then what Arthur Schlesinger, Jr. once said of sociology, that it was the painful enumeration of the obvious, ought to apply to fire science’s contribution to climatology.

But if the obvious beguiles, it is the second-order reasoning that proves treacherous. If you look at such data by itself, you might well conclude that climate alone “drives” the fire regime. Such analysis reduces a complex poker game to a game of solitaire: you can only play the cards nature hands you. The reality, however, is that there is another player at the table, and he is the dealer.

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Humanity is the Earth’s keystone species for fire, not only as a source of ignition but as a sculptor of landscape fuels. It is significant that this second source was present from the onset of the Holocene, or what is more aptly being called the Anthropocene. There has been no time since the end of the last glacial when the region lacked an ignition source both more promiscuous and more prescribed than lightning.

From the creation, too, hominids have indirectly affected vegetation. They could do so by foraging, hunting, and generally fussing with the landscapes, usually with fire as a catalyst. The Southwest Pleistocene was a veritable Serengeti of megafauna, and fast-combusting fire had to compete with slow-combusting grazers and browsers. Then the megafauna – the mammoths, the

Shasta ground sloths, the bison and Glyptodonts – all disappeared. More and more it appears that the newly arrived humans were a catalyst in that vanishing act. They did not have to hunt every individual to extinction; they had only to add another predator to a crowded menagerie and to magnify the climatic impacts of warming through their own landscape burning. They shifted the fulcrum of climate. Much as an atlatl can add lethal leverage to a spear, so a favorable climate adds heft to human fire-setting, and anthropogenic ignition expands the power of climate to affect landscapes. The elimination of megafauna liberated fine combustibles: the species that seized on the resulting surplus was humanity, which consumed it by fire, and through fire, reconstituted the landscape.¹

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For thousands of years, amid all the climatic wobbles that ended the Pleistocene, those fires followed prescriptions that fire history would characterize as aboriginal burning, which is to say, an alliance of torch and spear. Across almost all terrains and climates a common pattern emerges, as people brand the land with strips and patches, what might be termed lines of fire and fields of fire. The lines are corridors of travel; the fields, sites of recurring burning to assist hunting, to promote forage, and to harvest bulbs, grasses, nuts, honey, medicines, and the like.

The resulting matrix is elastic. Tight terrain and a hostile climate might confine fires to distinctive blocks: they burn where lit with little outward spread, leaving a sharply etched mosaic. Where the landscape is open and rolling, the winds strong, and drought or dry spells frequent, the fires spread widely, and the mosaic becomes mobile not only in place but over time. Ignitions, moreover, move out of lower elevations into upper realms as flames spread under the influence of slopes as well as winds. In such circumstances the power of the torch can exceed the grasp of its handlers. And where people can amplify the amount of combustibles by removing faunal competitors, their power magnifies still further.

Nor do such fires behave only as people will them. Many result from carelessness or accident, or a kind of fire-littering; and they obey the uncontrolled dictates of their surroundings. Some years they spread, some they don't. Some places get burned often, some rarely. Much as the removal of megafaunal competitors can cascade through a biota with unforeseen outcomes, so can the introduction of anthropogenic fire. Because the power of fire derives from the power to propagate, the source of human firepower resides, as so many aboriginal fire myths testify, in its setting. Nor are such fires always benign. Hunting fires can easily segue into fighting fires, as flame becomes, in contemporary language, weaponized. Hostile fire is as much a constant as fire hunts and smoke signals.

The Apaches exhibited a mix of calculated fire practices and fire littering. They put fire into the Chiricahuas through abandoned fires, signal fires, and fire hunting. They set patch-burns for gardens and foraging. They set fires to encourage rain. They used smoke to lure fly-maddened deer. They kindled hostile fires. They set diversionary fires. They burned along their major corridors, which then, when conditions favored, moved up slopes and into protected niches, creeping and flaring as conditions warranted, not unlike the raiders who originally kindled them. And, as possible, the Apaches kept their active fires hidden from those seeking them. Renegade bands relocated out of the lower grasslands and into mountains, out of contact with formal patrols from presidio or cavalry post.

The dynamic of Chiricahuan fire regimes reflected this unstable interaction. When the rains came early and heavy, aboriginal fires fizzled out, and when drought followed a bout of wet years, fires blitzed well beyond campfire ring and fire-drive. Overall, in places routinely visited by people, anthropogenic fires crowded out those of lightning; people burned first and preemptively seized the fire scene; they preferentially defined fire's regime.

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No less than with climate, humanity's presence has changed, in this case subject to the tidal and secular migrations of people and animals. The canonical Clovis site, where a distinctive lithic tradition met megafauna – a spearhead embedded in the bones of a mammoth – lies a little

to the east. Cultures have been arriving and departing ever since. The collapse of the Anasazi and Hohokam civilizations in the 12th and 13th centuries created a major vacuum in the historical geography of human habitation. The Athabascan-speaking Apaches moved from the western grasslands into the grassy semi-desert and then, at least seasonally, into the grassy-understory forests of the Sky Islands and Mogollon Rim. They carried their fire practices with them. The suppression of the Pueblo revolt of 1680 created another rupture. The infiltration of the Spanish mission system consolidated some tribes while evicting and resettling others. In 1762, for example, Spanish officials effectively emptied the San Pedro valley by relocating Northern Pimas to the Santa Cruz River valley.²

That created a borderlands area between old-resident Pimans and new-arrival Apaches. The region underwent regime change from quasi-permanent habitation to intermittent occupation, as the landscape became a war zone, partly occupied, often fought over, burned for battles as well as for hunts and foraging. Then the historic dynamic reached far beyond the grasp of mission and presidio by replacing the extinct megafauna with horses, cattle, sheep, goats, burros, and swine, all of which competed not only with wildlife but with fire. In principle, the combustibles that the late Pleistocene extinctions had liberated, the late Anthropocene would again corral, sending them into the gullets of livestock. In practice, that colonization first required the pacification and relocation of the Apaches. Not until the indigenes were suppressed did livestock overrun the ranges. Eerily, the year of Geronimo's surrender, 1886, saw the last great breakout of fire in the Chiricahuas. Free-burning flame had less to feed on, and starved. Even before the formal policies of suppression, the mountains had entered an era of fire famine.³

Of course the movement of imperial people into and out of the region – what anthropologist Edward Spicer in a larger context famously described as “cycles of conquest” - had to interact with the cycles of climate to yield the region's chronicle of fire. And that is precisely the point: it is the *interaction* of these two grand rhythms, one of wetting and dry, and one of human coming and going, that the region's fire records testify to. There is little dispute that massive overgrazing beginning in the 1880s coincided with a monumental drought in 1891 to drive the high grasslands and forest savannas into collapse; and by destroying surface combustibles, this one-two punch knocked fire out of the biota. It was, however, the removal of the Apache that allowed for the wholesale reintroduction of grazers. The extant fire regime received a triple blow: one from climate, one from fuels, and one from ignition sources. Two of the three were the outcome of people.⁴

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On all these counts controversy has flared, and it typically pivots on how much agency to grant humans. The critics claim the hard, high ground of science, dismissing outright appeals for human agency or herding them into disciplinary reservations where they are fed the lean rations of anecdote. Climate change, not spears and torches, must have driven megafauna over an evolutionary cliff. Climate change, not longhorns and shovels, must be responsible for squeezing fire out of mountain and grassland. Behind the conviction lies an insistence that one or the other cause must dominate.

The motives behind this reasoning are not difficult to discern. They are, first, often concerned less about the past than the future. If the protected sites are not “natural” but cultural landscapes, then the passage is open for people to reintroduce not merely fire but hunting, and then grazing, and ultimately to follow a slippery logic that must lead to trailer parks and casinos and “wisdom sitting” on slot machines. But the outcome can also challenge science because it says the numbers generated from tree-ring scars are not simple “proxies” of climate but indices of people and climate interacting in complex ways. That muddies not only the chronologies but the epistemological status of fire science, not to mention its funding. And not least, perhaps, is that old yearning for an Unmoved Mover. If people have shaped everything, there is no escape from our postmodern selves. The landscape becomes a Mobius strip. Granting agency to a few

lightning bolts seems a small price to pay to keep Nature's God, however secularized, in His heavens.

Yet a simpler explanation may also be at work, which points to timing, a coincidence not of climate but of culture. It is an accident of history that formal scholarship came to bear on the topic during a period when the human presence as a fire-lighter has been stripped away and human agency as a fire-fighter had become prominent. The debate about the relative power of nature and culture centered on lands deliberately emptied of most human activities, and for which almost all human fire practices were banned, save the relentless task of suppressing whatever fires might start. It was a kind of reverse reservation system, one intended not to keep people in but to keep them out.

This coincidence fundamentally distorted an emerging discourse. When observers – natural scientists – inquired into the causes of stream trenching, creeping desertification, and the smothering propagation of woody weeds, they did so not only with the instruments of their disciplines, but during a cycle of human migration in which anthropogenic fire had bottomed into a deep trough and enthusiasm for restoring “natural” fire was entering a crest. In the early days of state-sponsored conservation, right-thinkers aligned fires started by people with overhunting, abandoned clearcuts, and livestock that ate and trampled everything in their path, or what Teddy Roosevelt called “scalping” the land. People frequently burned promiscuously; lightning fires seemed lost in the mix. Then cultural interests shifted toward a fascination for the pure wild; for preserving unique habitats, for reintroducing wolves, for restoring lightning fire. Anthropogenic fire was deemed unnecessary and intrusive, and if used it was justified, like Star Trek's Prime Directive, to correct the errors of past intervention. Natural fire was by itself necessary, sufficient, and inevitable.

This discourse – there was not enough resistance to warrant calling it a debate - was both skewed and curiously scholastic. It ignored, for instance, the most fundamental of the facts before it: that the vacated “wildlands” existed because of cultural decisions that transcribed political values onto raw geography. These were wildlands free to express natural causes because people had chosen to make them so. Had public lands not existed, or had they not been moving toward a wilderness model of management, much of the debate would have been even more fatuous. And by restricting itself to certain kinds of evidence, the participants lacked the power to resolve their evolving discussion. Like the San Pedro River, the reasoning suddenly entrenched itself, and any new waterflow had to follow that deepened discourse.

The historic records are as dispersed and eccentric as the Sky Islands, and they are intrinsically suspect to those who demand clear signatures on natural archives like tree rings capable of quantification. For cultural archives, what gets recorded depends more on who does (or does not) do the recording than whether there is anything to record. Most early European observers were military patrols or missionaries, and the Apaches who flourished in the mountains had little interest in either. It was in the Chiricahuas particularly that they made their last defiant stand, using the international border and off-beat mountain trails to frustrate efforts to intercept them. Naturalists (and anthropologists) arrived much later, after the old regime had become scrambled; for the most part, after the cultural landscapes of the Apache had been suppressed, then sequestered, and finally dissolved. The only fires that persisted came from lightning since all lightning's competitors were gone.

What happened to the people happened also to their documentation: they got shoved into reservations outside the mainstream of fire science. Researchers examined them as they would dendrochronology, as packets of data, oblivious to their context or character. Henry Dobyns has wonderfully described, for example, the ability of the Apaches to avoid being seen by those looking for them. Since any smoke would advertise their position, they shunned fires when hostile observers were in the region. And until Apache scouts were exploited for counterinsurgency, it was easy for renegade bands to track and avoid the movements of military patrols whose journals have been a major source of ethnographic and ecological information. He

observes for the Mormon Battalion, which included “a number of wagons,” that the operation “engaged in the highly conspicuous activity of opening a wagon road through the Apacheria. A unit more unlikely to see hostile Apaches would be difficult to imagine.” Of later patrols by dragoons officered by “a more or less constantly intoxicated commander,” he comments wryly, that the “Apaches might well have had to attack this command in order to gain its attention.”⁵

It’s a classic case of the absence of evidence not indicating evidence of absence. In fact, there are more eyewitness records of anthropogenic ignitions than of lightning. If one demanded the same standard for both fire causes, we would have to dismiss natural fires as trivial.

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The fires reached a low in the 1920s, and not even the savage drought years of the Thirties could boost their acreage amid lands shorn of light combustibles. Too much had happened, and unlike the revolution that had ended the Pleistocene, which had leveraged the regional fire load upward, these reforms worked to depress it. Fire prevention was an agency goal, fire fighting had become more effective, forests were felled, woodlands fed into charcoal, and grazing, while reduced, was more than the mauled land could handle. But the fires were also receding from the rural countryside generally, as industrialization offered flame-free substitutes, bolstered suppression with trucks and pumps, and redirected the regional economy.

Everything worked to further dampen fire. The Depression knocked away what props remained to commodity production. The government stimulus by the Roosevelt Administration that replaced it unleashed, among other programs, the Civilian Conservation Corps, which led to a flurry of fire roads, lookout towers, and crews. Lightning and accident still kindled blazes in the hundreds; but they had little chance to roam before being attacked and they had scant forage to feed upon, even as woody flora began replacing grasses and forbs. By the 1950s, with war-surplus jeeps, trucks, and planes ordered to firelines, the landscape had changed irrevocably. It could no longer support the old fire regimes: consistent anthropogenic fires were gone and the predominantly grassy fuels that had carried flames like gentle winds ruffling Muhley and fescue had been forced aside in favor of dog-hair thickets of pine, scrubby understories, brushy hillsides, and woody litter thrown over whole mountains like a vast eider-down comforter. Even as the mid-1950s experienced the worst drought in decades, burned area plunged to token fractions of its former extent.

Research capabilities evolved, and explained the overturn of the biota by appeal to climatic cycles, galvanized by that late 19th-century irruption of livestock. Still, the cattle and sheep were regarded as a once-off event: it was the implacable rhythms of climate that laid down the fundamental reality. Certainly, this was the conclusion to their 1965 classic, *The Changing Mile*, in which James Hastings of the University of Arizona and Raymond Turner of the U.S. Geological Survey exploited repeat photography to record a massive shift from grasses to desert succulents and woody biotas particularly within the San Pedro watershed. They dismissed as incompetent “the fire hypothesis,” which implicated fire’s extirpation as a prominent factor. The more powerful institution was the Laboratory of Tree-Ring Research, first established in 1937 by the astronomer A.E. Douglass to record the effect of the sunspot cycle on climate. Dendrochronology easily segued from measuring the width of tree-rings as an indication of climatic fluctuations into chronicling the abundant fire scars branded onto them. Fire scars thus became a proxy for climate. The emerging annals confirmed what seemed self-evident to anyone who had studied the region over the past few decades: climate was the primary fact and force of change. And since lightning was an expression of climate, the primordial order of fire followed the syncopation of spark, rain, and drought.

Fire was natural – that much was obvious. What made it natural was its origin in climate, and if fire’s presence had diminished as an ecological enterprise over the past century, that was because people had unwisely meddled in nature’s economy. Those interventions could not endure. Irruptions of cattle and experiments in fire exclusion would pass, and climate would assert its supremacy in the end.

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By the time *The Changing Mile* saw print, America was fast spiraling toward its great cultural revolution on fire. The origins of that reformation are several, but for the public wildlands, the irrefutable argument was, fires are natural, and parks and wilderness areas ought to promote them as they would other expressions of the Wild. At the minimum they ought to stop trying to suppress them, which had in any event failed and had wrecked far worse havoc on the regional landscape than wild fire ever did. The war on fire had failed: it had only stirred up an ecological insurgency that no summer surges of firefighters and air tankers could contain. By 1968 the National Park Service had officially reformed its policy in an effort to promote more burning; a decade later, the U.S. Forest Service followed. By 1995 all the federal agencies had a common policy, reemphasized in 2001.

Actual change on the ground was slow, as ideas proved easier to apply in seminars and conference rooms than amid pine thickets and manzanita. But the direction of movement was clear, and research consistently pointed to the fire-climate bond as the primary driver of fire's ecological presence, as an argument to promote more, and as the standard for what restoration might achieve. As large patches of land – Saguaro National Monument in the Rincon Mountains, the Gila Wilderness in the Mimbres Mountains – allowed more room for lightning-kindled fire, something of a long chronicle of jostling burns emerged as empirical evidence that nature, and nature alone, could establish fire regimes, and that nature alone ought to do so. The mechanisms were doctrines of prescribed natural fire, later renamed wildland fire use, and bestowed with other euphemisms that disguise what the public is inclined to consider as let burning.

There were practical reasons for outsourcing the task to nature, principally safety and cost, for such fires proved much cheaper than the alternatives, at least until a fire broke its fetters, at which point it became more expensive and damaging to release. But the primary reason was ideological. Although deliberate prescribed burning had become an acceptable practice, it was generally regarded as a best-of-evils surrogate. It was a transitional phenomenon that would fade away as nature, under the implacable impress of climate, reclaimed more and more of its former dominion. Human ingenuity, arrogance, and mechanical might could not resist such indomitable forces as the El Niño-Southern Oscillation or the Mid-Atlantic Decadal Oscillation that, in the Southwest, chose to express themselves as fire. People could not exclude fire because they could not control climate.

This is the authorized version of how and why fire has reasserted itself. People have backed down from their idiotic and impossible attempts to stem the climatic tides, and have begun some measure of atonement by deliberately reinstating fire to amend for the years lost. Given time, climate will purge away the contaminants introduced by ranching and firefighting. A purer Nature will reclaim the landscape, under the distant direction of that Unmoved Mover, climate.

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The contemporary Chiricahuas, however, suggest another narrative. To the impossibility (and undesirability) of excluding lightning fire they add the impossibility (and undesirability) of excluding anthropogenic fire. The core issue is not whether fire is present or not but fire's regime, and for this people as nature's species monopolist over ignition must return along with lightning. What is interesting about the Chiricahuas is that each is active, both as an expression of official policy and quite in defiance of it. These fires can no more be stopped without ecological unrest than can lightning's.

Rangers and ranchers are reintroducing prescribed fire. A consortium, the Malpais Borderlands Group, has created an institutional matrix for coordinating burns among the Forest Service, National Park Service, Bureau of Land Management, Arizona State Forestry Division, The Nature Conservancy, and private landowners. The feds do it as a way to supplement natural ignition, a kind of performance enhancer. The ranchers do it because fire is the most powerful and cheapest way to stimulate the complex forage on which their way of life depends. The ancient rhythms of fire hunting have returned in the avatar of fire herding.

But the most interesting reintroduction is occurring outside official channels altogether. The Chiricahuas and neighboring Peloncillas have reestablished themselves as a portal for unauthorized human traffic across the international border – a veritable Mexican monsoon of border-crossers who carry fire as much as contraband. The variety and geography of the burns eerily echo the old Apache suite: abandoned cooking and warming fires, accidental fires, fires set as distress signals, fires kindled to divert attention away from illegal activities. The Border Patrol has proved no more effective in stemming such ignitions than the Forest Service was, over the long run, with lightning. In the end, both have proved unable to shut down the fires, and perhaps are unwilling to do so at the costs demanded. Officials can't turn off lightning, and they can't control people who are by definition renegades and "illegals." Fire has returned. The restored rhythms are restoring the old rhymes.

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The mountains are frustrating efforts to assert the primacy of one or the other ignition source. Both are ample, and in such intricately dissected terrain, washed over by cycles of climate and human migration, neither dominates. In this, the Chiricahuas may be synecdoche for the story of how we understand fire nationally. The right fire regimes will mix both sources. A proper scholarship will begin with the axiom that they interact, not that one or the other must be the designated driver.

What should matter is how fires, of any and all kinds, play out on the land around them. There will be a place for lightning-kindled blazes. And there will be a place for anthropogenic burning. The question that has tyrannized fire management since the 1960s – whether a fire is natural or not – hardly matters. So too the old obsession of fire science – whether nature or culture is the true irresistible force – is revealed for what it really is, a metaphysical query, a proxy not for "climate" but for the values of climate researchers. One might as well ask how many lightning fires can dance on the summit of Dos Cabezas.

The pace of reform is quickening. Nationally, the WFU is being discarded, as the PNF was before it, and as the "resource benefits" burn will be in the future. Under a doctrine of appropriate management response, there is only fire. Natural fire need not, as an initial response, be attacked: it might be tolerated, or even encouraged. In 2005 the Coronado National Forest amended its land management plan to allow for natural fires outside legally designated wilderness. In 2007 the Coronado began to scale up that new strategy; in 2008 it racked up 10,000 burned acres under its aegis; in early 2009, amid "unusual" weather, it approached nearly 20,000 burned acres even prior to the onset of its traditional fire season.

But that reclassification also means there is no intrinsic reason to swat out anthropogenic ignitions either. The old dichotomy among fire sources – natural and human, deliberate and accidental, malicious and benevolent – dissolves, as it becomes more difficult to police the policy borders that have discriminated among practices according to their sources. In truth the intellectual case is even more untenable as people have shifted their fire practices to industrial combustion – as they have replaced the open burning of biomass with the machine combustion of fossil fuels. This is proving an oscillation more powerful for pyrogeography than El Niño since it is evidently unhinging not only terrestrial biotas but the Earth's climate itself.

Such is the reality of fire in the Chiricahuas. It is not yet recognized by fire science, which has achieved much of its clarity by excising people just as it has omitted their fires. Take away human agency and only natural causes remain, and with only natural causes, the sole medium of research must fall to natural science. Only by knowing the proper mechanisms – linked in a chain of causality – can we devise suitable responses; only natural science can track that succession of attribution; and only such sciences can suitably translate the explicated chain of consequences into a chain of command by which research informs and management applies.

It was Aristotle who observed that without an unmovable final cause explanations would slide into an infinite regress. In order to succeed, an explanation, much as with a narrative, needs a fixed end. Otherwise each cause only leads to another, like a Sisyphian scavenger hunt. For fire

science that final fixed mover – the Prime Mover Unmoved - has been climate. But as anthropogenic combustion habits destabilize the atmosphere, the climate is no longer an Unmoved Mover (or an alien Other), but an extension of humanity's confused agency. The assurance that climate is the driver dissolves. It may be only a question of time before such realizations cross the border that divides the two cultures of science and humanities in such numbers that they force fire scholarship to accommodate people as it has nature.

For now, Chiricahuan fires are repeating a historical refrain. It may be that over the coming decades either their yin or their yang will once again go out of phase, that one or the other ignition source will be actively encouraged or deliberately suppressed. If so, one might expect, a few decades after such a misguided experiment, that the old repetend will once more reassert itself, and we will discover yet again that, however linguistically awkward, fire continues to rhyme with Chiricahua.

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¹ The summa remains Paul S. Martin and Richard Klein, eds., *Quaternary Extinctions. A Prehistoric Revolution* (University of Arizona Press, 1984). An excellent distillation applied to the region is Paul S. Martin, "Ghostly Grazers and Sky Islands," pp. 26-34, in Gerald J. Gottfried et al, compilers, *Connecting Mountain Islands and Desert Seas: Biodiversity and Management of the Madrean Archipelago II*. Proceedings, RMRS-P-36 (U.S. Forest Service, 2005).

² Sources: Henry F. Dobyns, *From Fire to Flood: Historic Human Destruction of Sonoran Desert Riverine Oases* (Socorro, NM: Ballena Press, 1981); and, though dating, still useful as a thumbnail, Stephen Pyne, *Fire in America* (Princeton University Press, 1982; reprint, Univ. of Washington Press, 1997), pp. 514-529.

³ Dobyns, *From Fire to Flood*, p. 36.

⁴ Edward H. Spicer, *Cycles of Conquest: Cycles of Conquest: The Impact of Spain, Mexico, and the United States on Indians of the Southwest, 1533-1960*, 2nd ed (University of Arizona Press, 1967).

⁵ Dobyns, *From Fire to Flood*, p. 30.