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Good morning. I'm a professor in the Human Dimensions faculty, School of Life Sciences, Arizona State University. What I have to say is the result of 48 years associated with wildland fire in some capacity or other. Most recently, with funding from the Forest Service, DoI, and Joint Fire Science Program, I have been writing a history of wildland fire in America since 1960.

Modern fire management effectively began in the aftermath of the Great Fires of 1910. The Big Blowup traumatized the fledgling Forest Service and its chiefs for decades. One of the aftershocks, the 1911 Weeks Act, established the basis for a national infrastructure with the U.S. Forest Service as the institutional matrix.

For the next 50 years the country pursued a strategy of fire exclusion, so far as possible. The Forest Service connected federal agencies and states. It was a policy of *resistance* - that is, it sought to eliminate the fire threat by attacking every fire before it could become big, a kind of forward strategy. Part of the appeal of the policy was its administrative clarity and unblinking rules of engagement that mandated control by 10 am the morning following a fire's discovery. By 1960 the Forest Service had become a benign hegemon that controlled nearly every aspect of wildland fire and much of the rural fire scene.

This approach proved useful for rapidly building out a national system. It failed, however, as a universal strategy because it proved impossible to abolish fire, because those fires that did escape initial attack only became bigger, and because many landscapes suffered from a lack of fire. The strategy eliminated good fires as well as bad ones. It forced one agency to absorb and resolve all the tensions regarding how the national estate should be managed.

In the 1960s a new strategy of *restoration* emerged. It sought to reinstate the good fires lost under the previous regime, it wanted a more pluralistic oversight of policy than that provided by the Forest Service, and it nurtured a civil society to counter what was becoming a de facto government monopoly. Critically, it was not enough to have a stand-alone fire protection program: fire had to be integrated with land management. Over the next 15 years every federal land agency had its mission rechartered. As the purpose of those lands changed, so did their requirements for fire.

The first salvos in this fire revolution came in 1962. By 1968 the National Park Service had recanted the 10 am policy in favor of restoration; in 1978 the Forest Service achieved a complete overhaul of its fire mission and its financing. The new strategy pivoted around a concept of fire by prescription. Good fires would be introduced deliberately on working landscapes, and natural fires would be granted more room to do their ecological work in wild landscapes; both kinds of fire would be conducted under a specified set of guidelines called a prescription. Meanwhile, interagency organizations supplemented and then replaced the Forest Service as an overseer, and then they expanded from interagency programs to intergovernmental ones, and now they include NGOs and the private sector as well. The collapse of the old order was remarkably swift. It was like watching the Berlin Wall fall overnight. Or less dramatically, like watching the breakup of AT&T's telephone monopoly which happened at the same time.

The new strategy has now run its own 50-year course, and its problems and promises have sharpened. Prescribed burning has proved more a regional than a national project. It works as a foundational doctrine in the southeast and parts of the Great Plains - though no one seems to get as much burning done as they believe they need - but it has not become a routine operation in the West or Alaska. The prescribed natural fire died as a concept after the 1988 Yellowstone fires, though it continues to be reincarnated in other avatars.

The fire revolution overall stalled during the 1980s. The reasons are many; some within the purview of the American fire community, many not. Reforms renewed after the 1994 season, culminating in a common federal wildland fire policy (1995) and the National Fire Plan (2000). The project has had its successes and showcase programs, but the sad fact remains that the reformation in fire management has not achieved anything like the dimensions projected or needed. Most observers consider that the threats are outpacing our responses. Moreover, the institutional scene has been overwhelmed by competing purposes and new organizations including local-jurisdiction and volunteer fire departments, a gamut of NGOs from the Nature Conservancy to National Coalition of Prescribed Fire Councils, and private companies which have grown on such a scale that critics now speak of a fire-industrial complex.

Which leads to a consideration of what the next 50 years might hold. A new strategy seems to be congealing in the West that we might label *resilience*. It accepts that we aren't going to get ahead of the problem overall, that too many variables are in motion, that the fire community controls too few of those causes to intervene in fundamental ways. It seeks to make the best of the hand we are being dealt, even if, paradoxically, American society is the dealer.

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

Resistance. There remains an Old Guard from the 1960s who would like a return to the former order, and there are more contemporary thinkers who want to transform wildland fire organizations into an all-hazard emergency service, effectively urban fire departments in the woods, or at a national level, a kind of Coast Guard for the interior.

This is happening globally, motivated by desires to protect structures and lives. Evidence to date suggest that such a revival or a repurposing can help attend to a threatened public but it has not shown it can manage fire because it breaks the bond between fire management and land management. If it retains the strengths of fire suppression, it also retains suppression's formidable weaknesses as a singular strategy.

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

There are many projects actively underway. Yet if its vision still shines brightly, so, too, its problems continue to darken. It has proved costly, not only in money but in political and social capital. Research, reviews, NEPA protocols, endless conversations among stakeholders - these are a necessary exercise in democracy but can take years. Moreover, the actual area involved is small relative to the size of the challenge. The threats are growing bigger and faster than our responses. We need flexibility to operate on landscape scales, not only geographically but institutionally. We need to move beyond single projects and events. There is little reason to believe that the country will muster the will to rehabilitate at the rate or scale required the 39-58 million acres believed out of whack.

Resilience. In the West a strategy is emerging that accepts, in fact if not in doctrine, that we cannot get ahead of the problems coming at us. Instead, it allows for the management of wildland fires to shift, where possible, from attempts at direct control to more indirect reliance on confining and containing outbreaks. Of course there are fires that simply bolt away from the moment of ignition. But many fires offer opportunities to back off and burn out. It is hoped that this strategy will prove

more cost effective and safer for fire crews, while introducing some degree of semi-controlled ecological burning. These are not let-burns. Rather, fire officers concentrate their efforts at point protection where assets are most valuable such as communities, municipal watersheds, or sequoia groves. Elsewhere they will try to pick places - draw boxes - which they can hold with minimum costs, risks, and damages. A given fire might see aggressive firefighting on one flank, or on one day, and a more removed burning out on another flank or at another time.

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

Equally, we need a reordering of the institutional landscape. In political terms we are witnessing the American fire community's euro moment. We either truly integrate, or we break up, or we tolerate endless bailouts. The National Cohesive Strategy could become the start of a kind of fire constitution that redefines for our federal system the roles, rights, and responsibilities of the many, many players in the American way of fire. It could do for the future what the Weeks Act did after the Big Blowup.

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

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

Thank you.